Helios FM 20/100 W
User manual

87.5 – 108 MHz

20 OR 100 W STEREO AND MULTIPLEX COMPACT FM DIGITAL TRANSMITTER

WITH TCP/IP MONITORING*

**depending on options*

Date: 2011/12/05

ecreso WorldCast Systems Group

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1. INTRODUCTION

1.1. About Ecreso

Founded in 1956 near Bordeaux, ECRESO was created by radio broadcasting enthusiasts and counts today as one of the most important players on the international broadcasting stage.

ECRESO offers analog and digital radio as well as digital TV transmitters (FM, DAB, DAB+, T-DMB, DVB-T/H), low power transmitters, which are air-cooled, as well as high power devices either air or water-cooled.

ECRESO is part of the WorldCast Systems group of companies which combines the collective expertise & extensive product portfolio of several major broadcast brands to offer turnkey systems in all major analog and digital technologies. Other brands within the group include:

- Audemat who designs monitoring equipment for analog and digital radio and TV as well as an extensive range of facility remote control solutions.

- APT Codecs who offer reliable and cost effective broadcast codec platforms delivering high quality content over IP, T1, E1, ISDN & Leased Lines.

As such, WorldCast Systems can offer complete broadcast solutions for the delivery, transmission and monitoring of broadcast content throughout the broadcast chain.

The group is founded on three core values:

1) **Product innovation:**
   Audemat places a key emphasis on Research & Development and its innovative approach has been repeatedly recognized by the industry. WorldCast Systems has won awards for innovation at consecutive NAB Shows for over 10 years.

2) **Customer satisfaction:**
   Audemat is dedicated to ensuring the best quality, value and service for its customers and has achieved IS0 9001 certification.

3) **Sustainable Development:**
   Audemat is committed to sustainable development and demonstrates this commitment in several ways: it has been ISO 14001 certified since 2007, adheres to the UN Global Compact project and all new products are developed in keeping with an eco-design philosophy and built within Audemat's low energy consumption factory.

Audemat/Ecreso employs around 80 employees at headquarters in Bordeaux-Merignac, France. Audemat/Ecreso also has a subsidiary in Miami, USA that manages the North & South American markets as well as sales offices in the UK, India and China. An extensive network of international dealers and distributors means that the company is represented in over 45 countries throughout Europe, Middle East, Africa and Asia.

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1.2. Before you start

This equipment complies with international mechanical and electrical standards. To maintain this compliance, as well as to ensure proper and safe working conditions and avoid electrical shocks and fire hazards, you must comply with the following recommendations:

1 - The device should only be utilized in the conditions described in the user manual.
2 - The device is designed for industrial usage and must only be operated by qualified personnel.
3 - The device may be heavy; it must be lifted and handled with care, specifically during unpacking and set up.

Electrical precautions

4 - Unplug from mains outlet before any intervention.
5 - Any maintenance, adjustment or repair must be carried out by personnel specifically trained by WorldCast Systems.
6 - Before switching on the device, make sure the nominal voltage specified on the device matches the mains nominal voltage.
7 - The device should only be operated on a stable electrical network. If the electrical network is not stable, a power conditioner, such as a UPS, must be used
8 - The device must only be used with a plug that incorporates a protective ground contact.
9 - To avoid any risk of electrocution, the protection conductor must not be cut, intentionally or accidentally, either on the device or on the power cord.
10 - High quality shielded cables are mandatory.

Environmental precautions

11 - It is necessary to verify that environmental conditions comply with those recommended in the manual.
12 - Nothing must obstruct the ventilation.
13 - To avoid any electromagnetic interference, the device must only be used when it is closed, installed in a cabinet and connected to the earth as per the instructions.
14 - The device should not be exposed to dripping or splashing and no objects filled with liquids, such as coffee cups, should be placed on the equipment.

Precautions regarding the lithium battery

This device includes a lithium battery.

If the battery is not correctly replaced, there is a risk of explosion.

Only replace it with a battery of the same type. Contact us before attempting to use another type

15 - Do not puncture the battery
16 - Do not throw the battery in fire
17 - Do not immerse the battery in water
18 - Do not throw away the used battery, recycle it instead. You may send it back to us if needed.

If these precautions are not followed, the guarantee will be void.

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2. DESCRIPTION

2.1. General description

Combining the very latest technologies with our proven RF experience, our 20 W and 100 W exciters have been designed to offer an innovative and highly reliable solution.

Among the first FM transmitters based on 6th Generation MOSFET, these transmitters are not only more robust, they also deliver efficiency of up to 74%. Top signal quality and performance are achieved thanks to the “FM Band Direct to Frequency” digital modulator which is at the heart of this range.

The manufacturing quality and the simplicity of use make these truly powerful transmitters to broadcast analog FM programs.

The Helios FM 20/100 W is fully protected against overheating, VSWR and lightning.

In addition, several innovative features are available, such as RDS encoding and automated audio backup. Fully featured for local maintenance and configuration, it also allows full remote control by Web server, SNMP, RS232 or GPIOs*.

* Options available with the current version are:

- Basic RDS: the internal RDS encoder makes it possible to manage basic RDS parameters (PI, PS, TP, TA, PTY, MS, DI, radiotext, PTYN, group sequence, AF, 1 PSN, 2 DSN, dynamic scrolling PS)
- GPIO: this additional board allows remote control and management of your transmitter.
- TCP/IP: this additional board allows remote configuration via a web site and SNMP management

Project co-financed by the European Union, involved in the Aquitaine Area, through the European Funds for local development.

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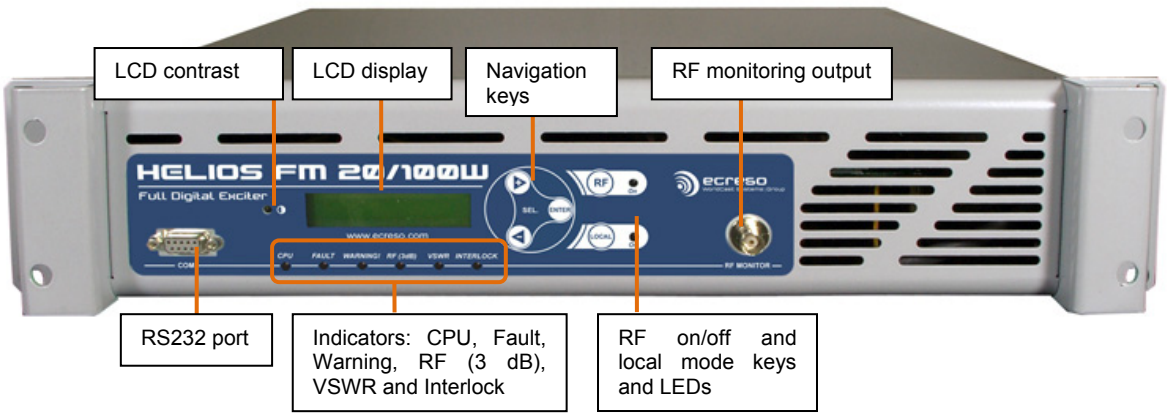
2.2. Helios FM 20/100 W Description

2.2.1. Front panel



Description of indicator LEDs:

- CPU: blinks to indicate CPU activity
- FAULT: major fault of the unit (RF / VSWR protection, Temperature, …)
- WARNING: minor fault of the unit (ambient temperature, radiator temperature, fan, current, voltage, loss of signal).
- VSWR: VSWR of the unit
- RF (3dB) : 3 dB of the unit
- INTERLOCK: indicates that internal or external safety links are not activated

- RF: indicates that the unit is on RF=ON. Associated to the RF button
- LOCAL: indicates that the unit is in local mode. Associated to the Local button

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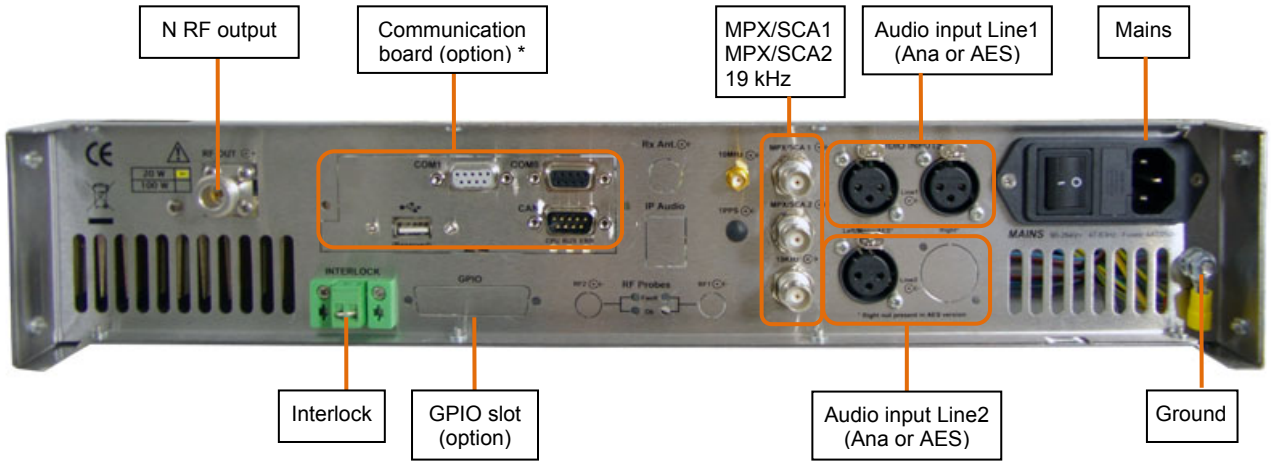
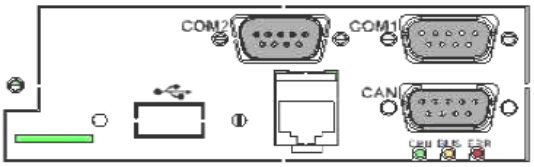
2.2.2. Rear panel



* Two optional communication boards are available:

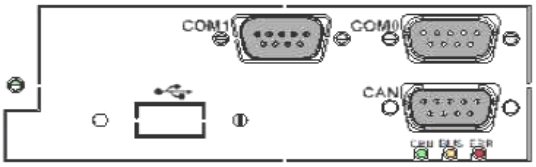
TCP/IP board

- 2 RS232 ports (COM1 and COM2)
- 1 µSD card
- 1 USB port
- 1 Ethernet port
- 1 CAN port



CAN board

- 2 RS232 ports (COM0 and COM1)
- 1 slave USB port
- 1 CAN port



On the CAN board, the COM0 port is reserved for the unit's upgrade.

Please not that the 19 kHz output and the 10 MHz input are not enabled on this preliminary version.

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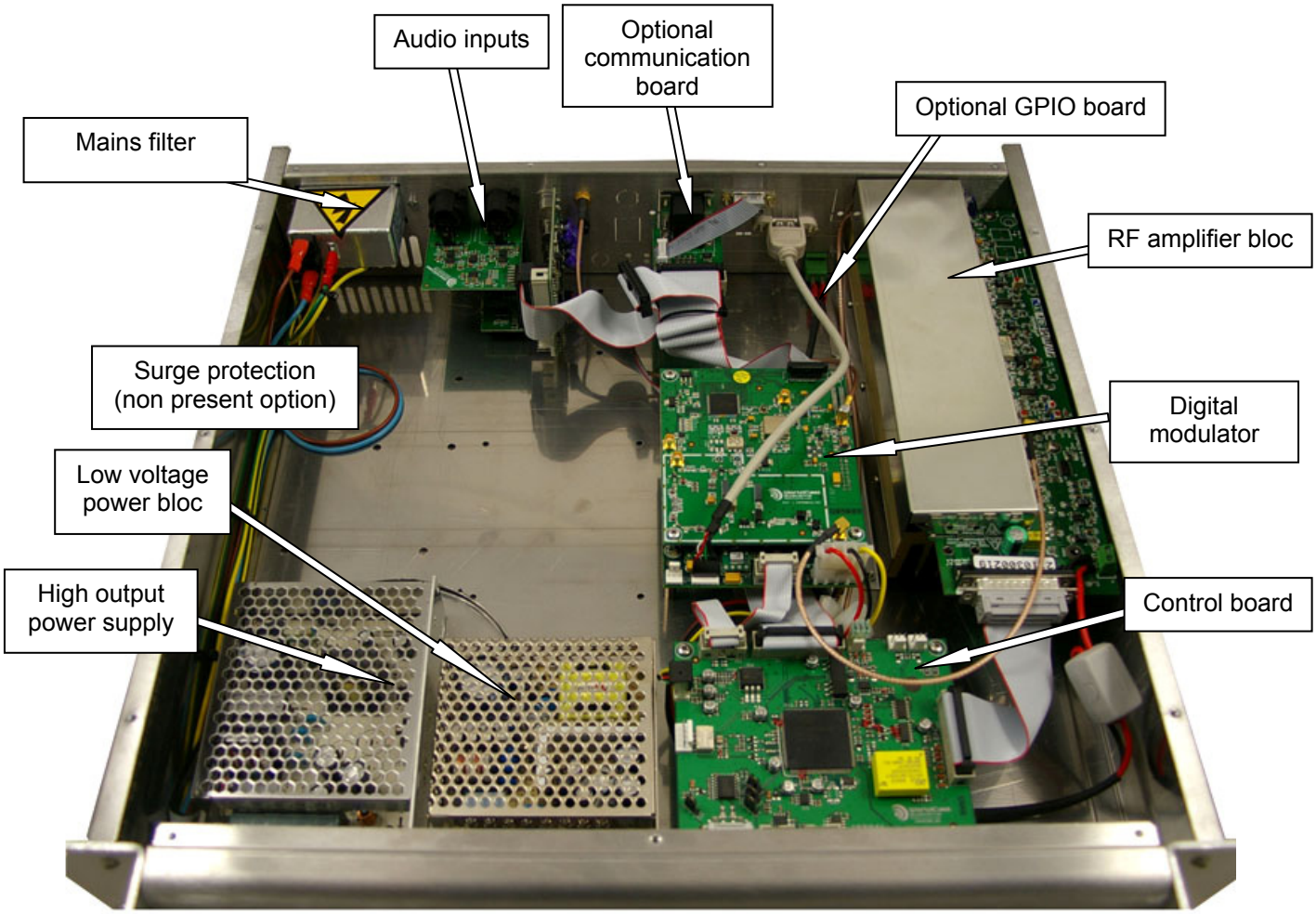
2.2.3. Opened cover



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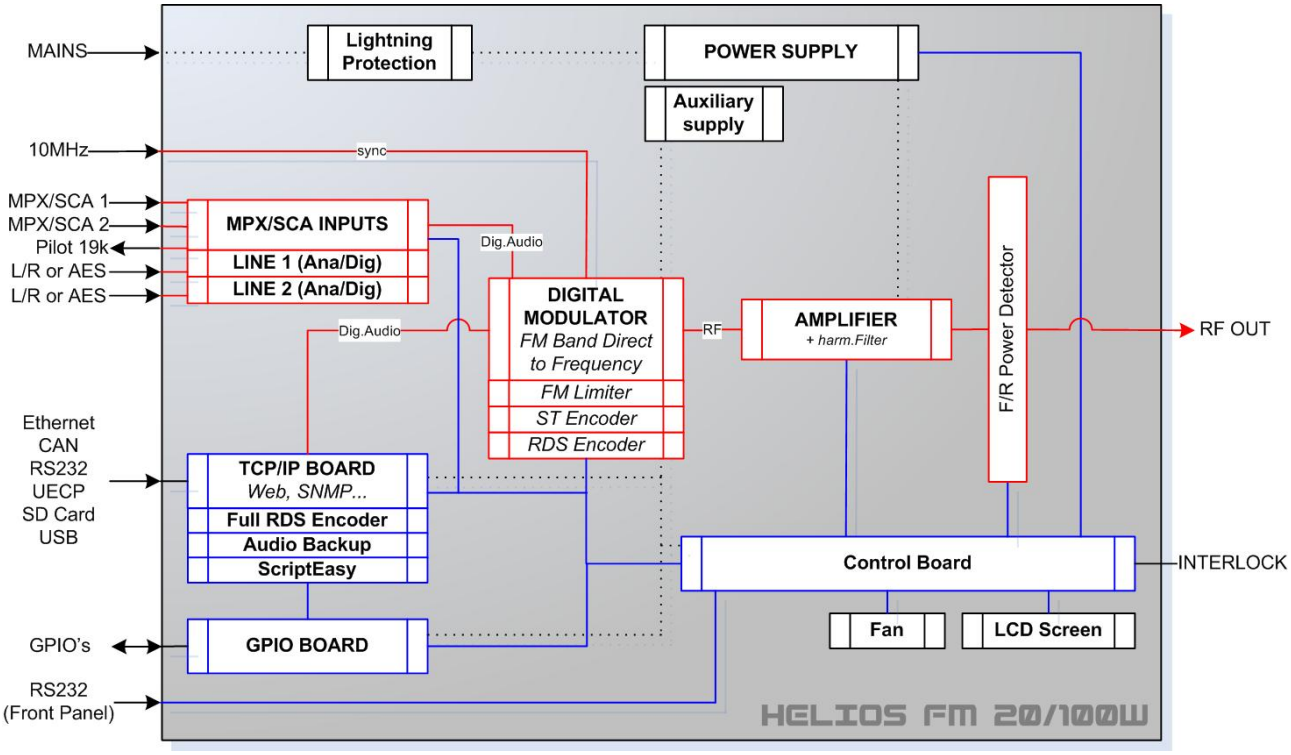
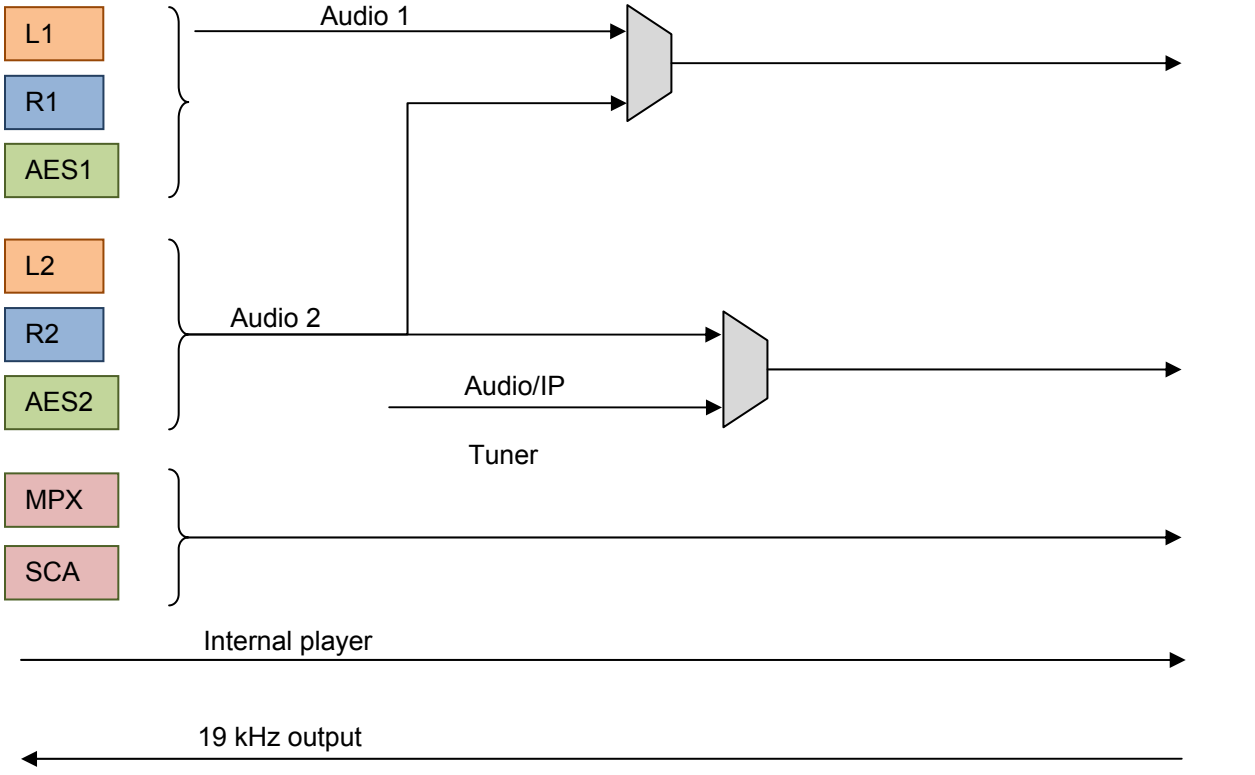
2.2.4. Synoptic

Helios FM 20/100 W



Audio



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2.2.5. 2U Rack

The choice of stainless steel as material guarantees against corrosion. The rack structure and the structure of the monoblock front panel reinforce the device. The rectangular outline of the rounded front panel has a large LCD display protected by armored glass. This display can be read from a few yards away. The transport handles are mechanically interchangeable and can be removed with the front panel. The cover is fixed by a set of M3 POZIDRIV screws and can be easily removed. The user has access to every module to set the parameters of the device.

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3. TECHNICAL SPECIFICATIONS

3.1. RF section

Frequency range	87.5 to 108 MHz
Summary of different steps	10 kHz
Frequency stability	< 10^{-6} per year
Power range	0-20 W or 0-100 W @ ROS=1.35
Power output	continuously 0-20 W or 0-100 W
Spurious and harmonic suppression	> 75 dBc

3.2. Composite operation

Bandwidth	> 20 Hz to 68 kHz @ 0.1 dB
	> 20 Hz to 92 kHz @ 0.4 dB
Intermodulation distortion	< 0.05%
FM S/N ratio	> 80 dB RMS @ 75 kHz deviation
AM noise	< 0.1% (50 dB) RMS (20-20 000 Hz)

3.3. Stereo operation

Bandwidth	> 20 Hz to 15 kHz @ 0.1 dB
38 kHz discontinuance	> 50 dB
Stereophonic separation	> 50 dB
Preemphasis	0 µs, 50 µs or 75 µs

3.4. Mono operation

Bandwidth	> 40 Hz to 15 kHz @ 0.1 dB
Out of band rejection	> 40 dB @ 19 kHz
Preemphasis	0 µs, 50 µs or 75 µs

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3.5. AF inputs

Analog (LINE1)

Connector	"XLR" type
Impedance	> 10 kΩ by default, adjustable to 600 Ω by jumpers, unbalanced
Bandwidth	Software adjustable
Level	Software adjustable (-18/+18 dBu range)

AES (LINE2)

Connector	"XLR" type
Impedance	> 110 Ω balanced
Bandwidth	Software adjustable
Level	Software adjustable (-20 to 0 dBFS range)
Sampling rate	Auto adjusted up to 192 kb/s
Bit	16, 24, 32

Multiplex (MPX/SCA)

Connector	"BNC" type
Impedance	> 5 kΩ unbalanced
Level	Software adjustable (-18/+18 dBu range)

3.6. HF output

Connector	N type
Impedance	50 Ω

Monitoring (RF Monitor)

Level	10 dBm @ 20/100 W at main output

3.7. Power supply

Voltage	90 VAC to 264 VAC
Frequency	50 Hz - 60 Hz
Max consumption	< 300 W @ nominal power

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3.8. Interface panel

Indicators	Green LED: CPU activity
	Red LED: major fault
	Yellow LED: minor fault
	Red LED: RF fault (3 dB)
	Red LED: VSWR fault
	Green LED: safety interlock
Screens	Back lighted LCD: displays operating parameters and menus.
Buttons	+, -- and OK

3.9. Environmental

Nominal operating temperature	5°C to 45°C
Maximum operating temperature	0°C to 50°C
Warehousing temperature	-20°C to +70°C
Warehousing time	< 10 years
Cooling	Internal ventilation (2 x~1.6 l/s)

3.10. Physical

Helios FM 20/100 W

Overall dimension	19'' (482.6 mm) X 2U (89 mm) X 470 mm
Rack size without front panel	440.4 X 82 X 466.5 mm (WxHxD)
Enclosure depth required	600 mm
Mounting	19''enclosure, with 4 M6X12 screws
Weight	around 6.5 kg

0

3.11. Miscellaneous

Marking	CE
Standards	1999/5/CE (R&TTE)
	ETS 302 018 (EMC)
	ETS 300 384 (Radio)
	NF EN 60215 (Safety)

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4. STARTING UP YOUR TRANSMITTER

4.1. Connecting the transmitter

1. Make sure the safety loop is present on the rear panel.
2. Connect the transmitter RF output to a 50 Ω load with a wattmeter.
   The 50 Ω charge power must be greater than 30 W for a 20 W transmitter and greater than 150 W for a 100 W transmitter.

   When you acquired your Helios FM 20/100 W, the RF amplifier is deactivated and power is set to 0 W. These settings can be adjusted using the PC application, the front panel application or serial commands.
3. Connect the audio or MPX inputs.
4. Connect a PC to the serial port on the front panel of the Helios.
   If your PC does not have a RS-232 port, use a USB/RS-232 cable.

   Connect to power using the provided cable; you may unscrew the cable loop and pass the power cable through it to secure it. Press the Local button on the front panel, then the RF button.

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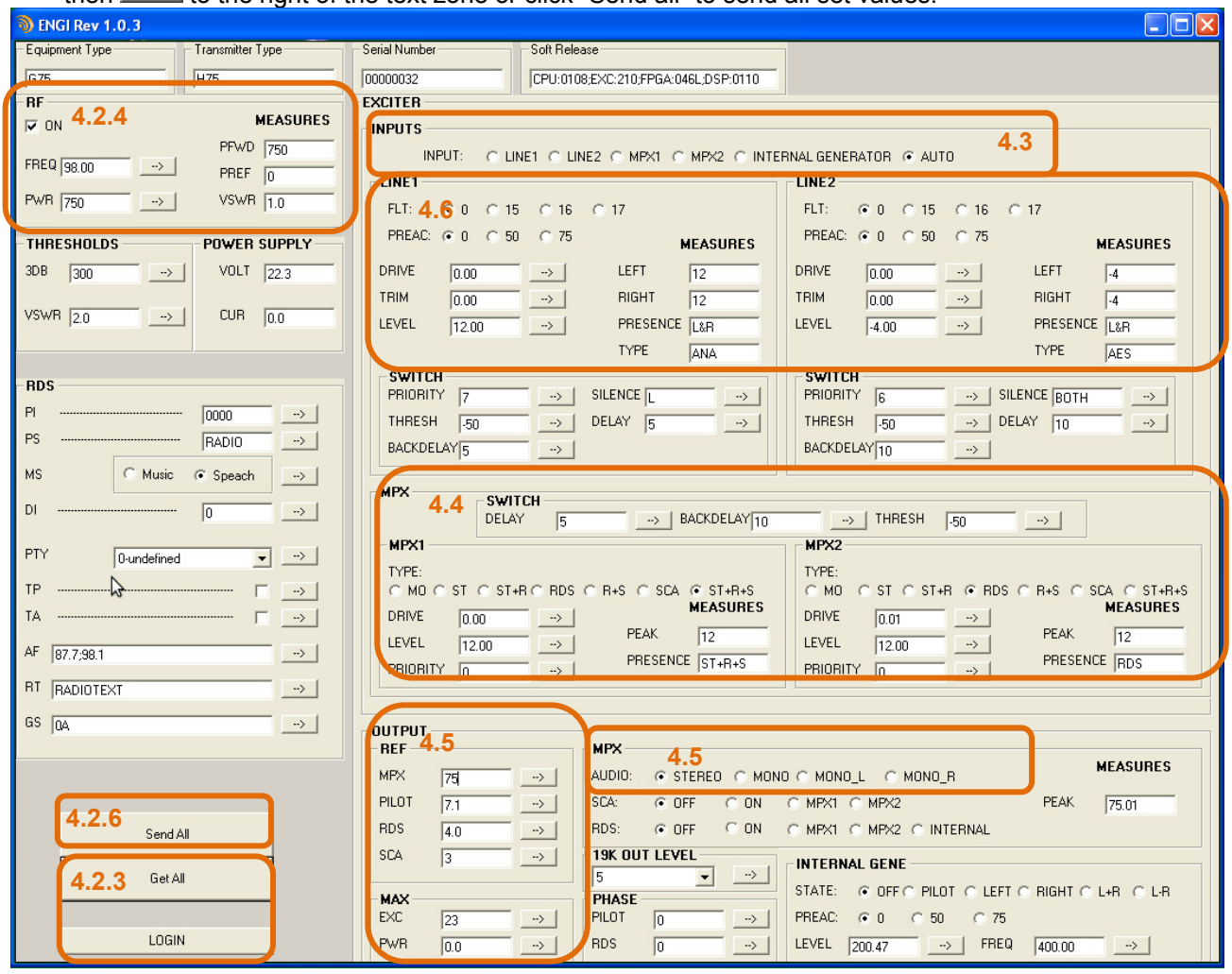
4.2. Setting the transmitter

1. On the PC, start the control software. This is a set-up tool that will allow you to quickly set and test your transmitter. All settings and measurements are also available on the front panel screen and with serial commands.
2. Select the port connected to the Helios and its speed.
3. The “Get all” button allows you to retrieve current values (9600, 8, N, 1 for the front panel connector).
4. Set the power (in W), the frequency (in MHz) and enable the RF.
5. Set other parameters as desired. Value formats for all parameters are available in the list of serial commands (see manual).
6. To send a parameter value to the transmitter, click the login button; no password is set in factory. Click then --> to the right of the text zone or click “Send all” to send all set values.



** Numbers above correspond to the paragraph numbers.*

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4.3. Input selection

The input can be set to:

- Line1 for the analog inputs (see sections 4.5 to 4.7)
- Line2 for the AES (see sections 4.5 to 4.7)
- MPX1 and MPX2 inputs (see sections 4.4 and 4.7)
- Internal generator

4.4. Setting the MPX inputs

- Set the drive before processing between -6 and +6 dB
- Set the nominal level between -50 and +50 dBu
- Set the input type:
  - "MO" for mono
  - "ST" for stereo
  - "ST+R+S" for Stereo+RDS+SCA
  - "ST+R" for Stereo+RDS
  - "RDS" for RDS
  - "RDS+SCA" for RDS+SCA
  - "SCA" for SCA

  The corresponding filter will be applied.

4.5. MPX configuration

- Set the audio type to:
  - STEREO
  - MONO
  - MONO_L
  - MONO_R

  Selecting STEREO enables the internal 19 kHz; you will therefore want to select MONO for an MPX input.
- Set the total deviation between 0 and 150 kHz
- Set the pilot deviation between 0 and 25.5 kHz
- If internal RDS is needed, set the RDS encoder deviation between 0 and 25.5 kHz (recommended deviation is 4 kHz)
- Set the max excursion between 0 and 200 kHz

4.6. Setting the analog or AES inputs

Use the LINE1 commands for the analog inputs.

Use the LINE2 commands for the AES inputs.

- Set the drive before processing between -6 and +6 dB
- Set the nominal level between -50 and +50 dBu
- Set the pre-emphasis to 0, 50 or 75 µs depending on your country (50 µs in Europe, 75 µs in the USA).

4.7. Getting on air

1. Disable the RF to turn off the transmitter using the front panel RF key.
2. Make sure the RF indicator LED is off.
3. Disconnect the load and connect the antenna to the transmitter RF output.
4. Enable the RF again using the front panel RF key.

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5. FRONT SCREEN USE

5.1. Overview

The transmitter can be entirely set using the front panel application.

For audio configuration you will use the following menus:

- **Input Select**: to select the main audio source and the secondary audio sources.
- **Input Switch**: to set switching criteria between the main source and the secondary sources.
- **Line1 / Line2 / MPX1 / MPX2 / Audio Gene**: to set levels and processes for each source.
- **Modulation**: to set the deviation for each sub-carrier of the multiplex signal. In this menu you may also enable RDS and SCA.
- **Stereo Encoder**: to choose the content of each sub-carrier of the multiplex signal (stereo, RDS, SCA).
- **RDS**: to set the RDS.

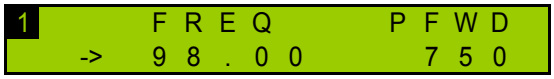
5.2. Working principe

Three keys allow you to browse through the menus: + − ENTER

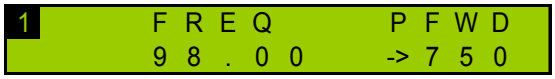
With the + and − keys, go from one screen to the next or rather from one command to the next: if 2 commands are available from a single screen, press + twice to go to the next screen.

A command is selected when an arrow is visible before its name.

Example:



The frequency is selected



The power is selected

The + and − keys are also used to adjust values after the edit mode has been enabled.

To adjust a value, set each character at a time. Text values are set from left to right; number values are set from right to left.

The ENTER button is used to:

- Access a lower level menu
- Enable the edit mode for parameters that can be modified
- Confirm a new value
- Return to the higher level menu.

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Some menus include sub-menus. To make it easier to browse through the menus and locate the information, a small number is visible on the top left of the screen; it gives you the level of the menu you are viewing (1 or 2).

If a text string is longer than the screen, press the

key to access the text string and to scroll.

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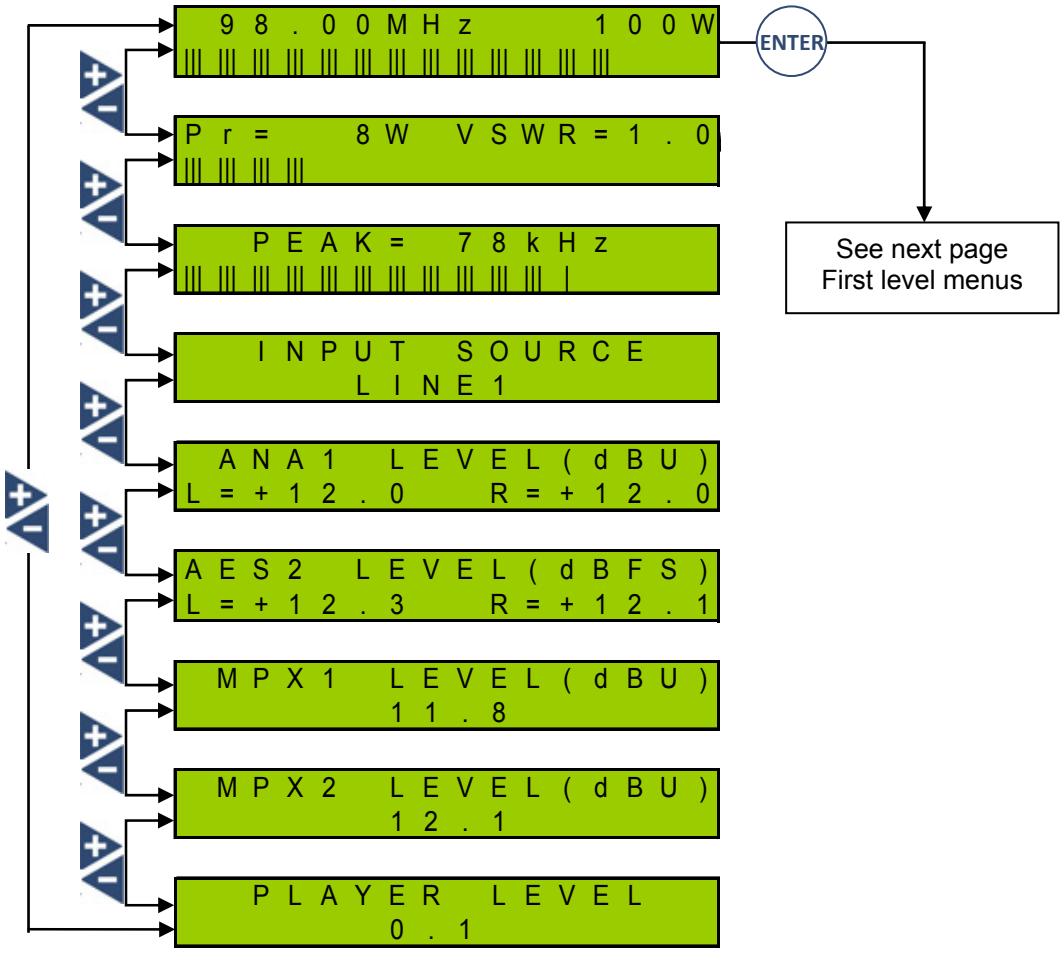
5.3. Structure of the menus

5.3.1. First level measurements

These values are read-only; bargraphs may also be available.



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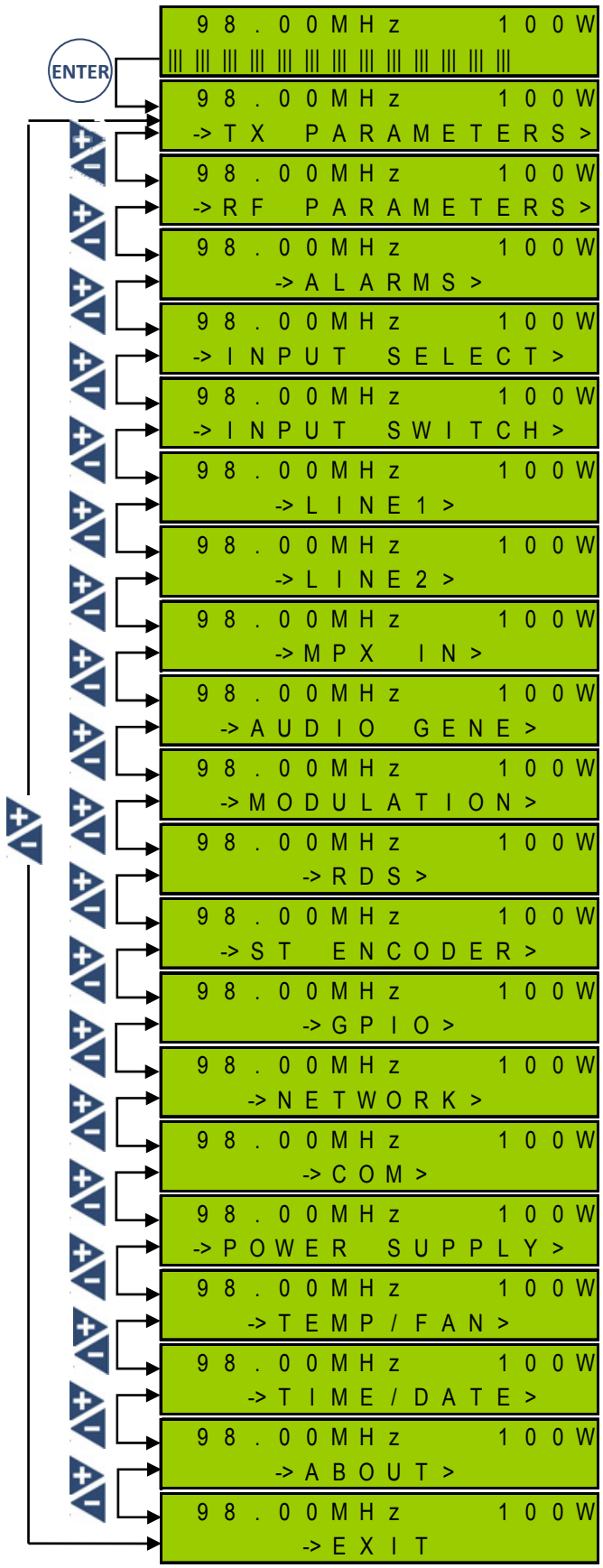
5.3.2. First level menus



The arrow > at the end of the 2nd line indicates there is a sub-menu. Press the "Enter" key to access it.

Available menus vary depending on the options actually implemented on the transmitter, and its state.

Each menu is detailed in the following pages.

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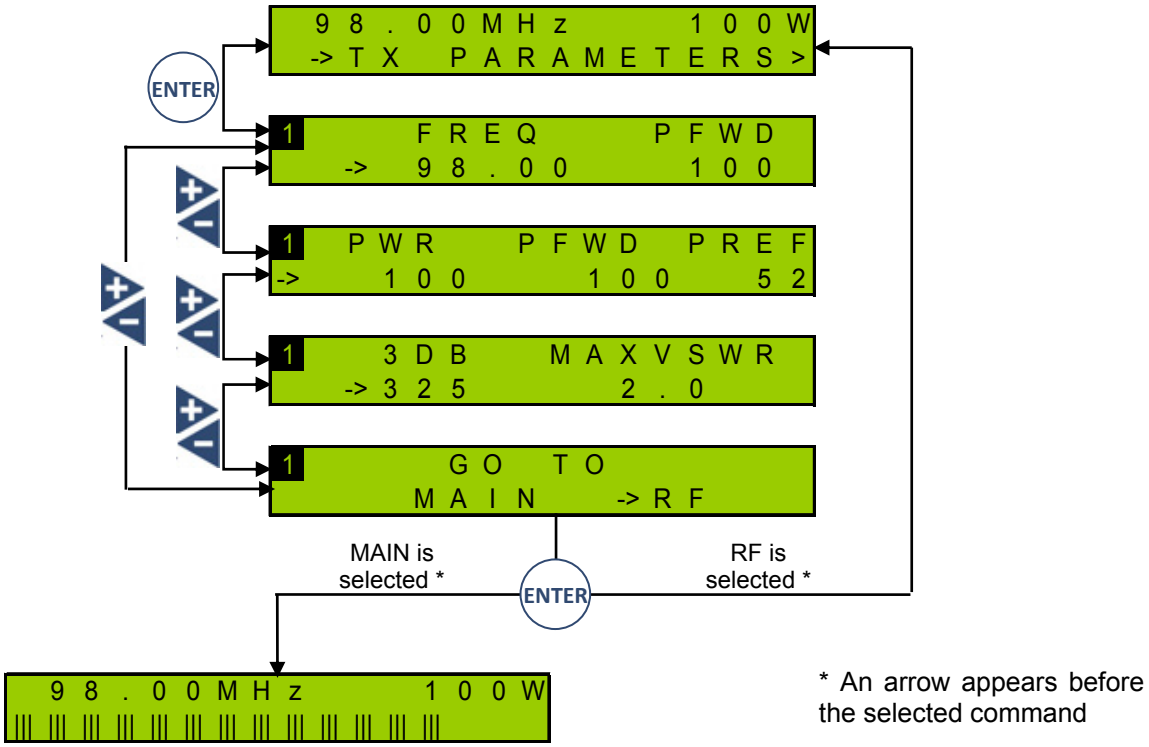
5.3.3. TX PARAMETERS Menu



Main measurement screen

5.3.4. ALARMS Menu

This read-only menu is only visible if alarms are present. It then displays one screen per current alarm: press the ENTER key then the + key to scroll through them.

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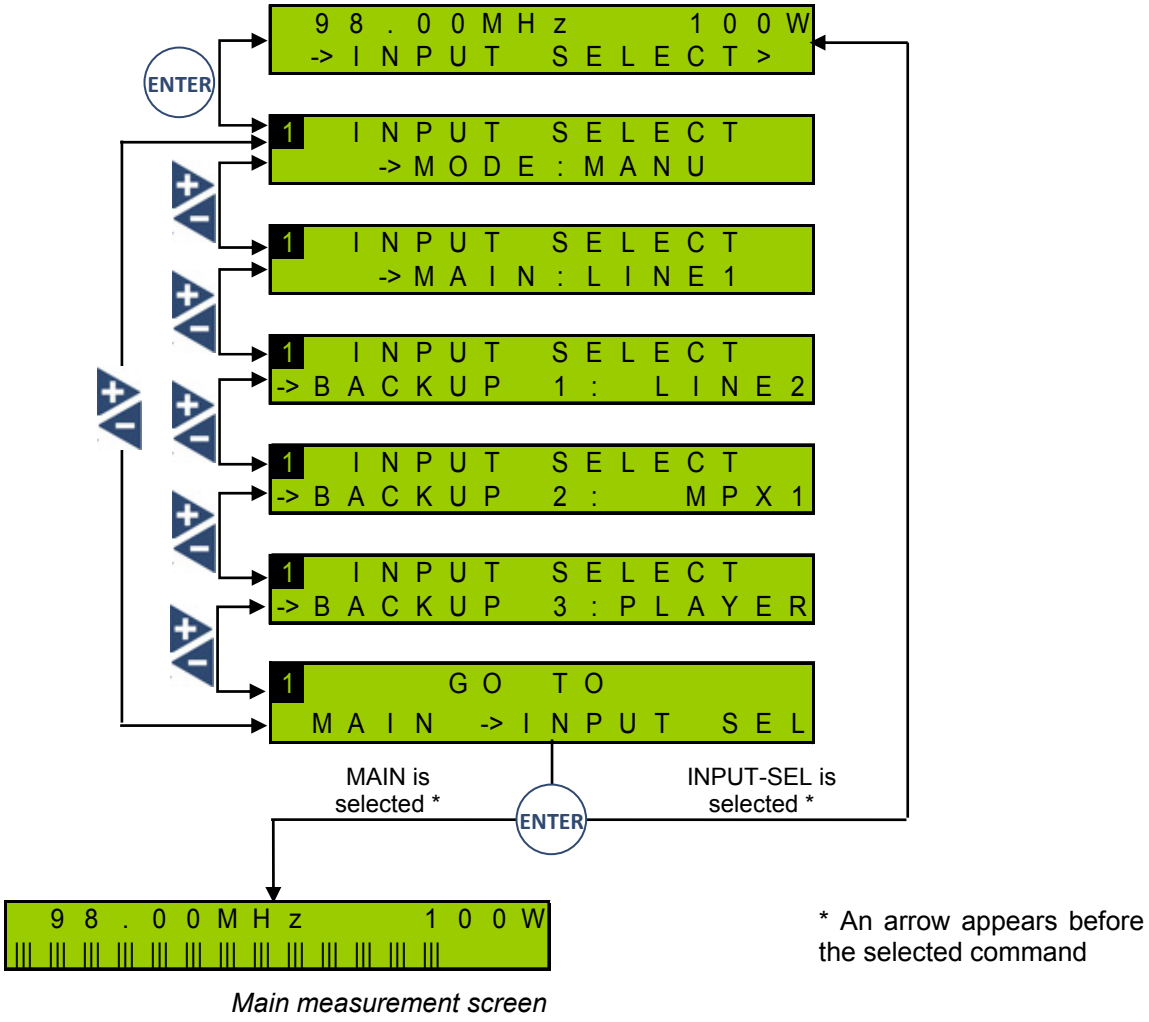
5.3.5. INPUT SELECT Menu



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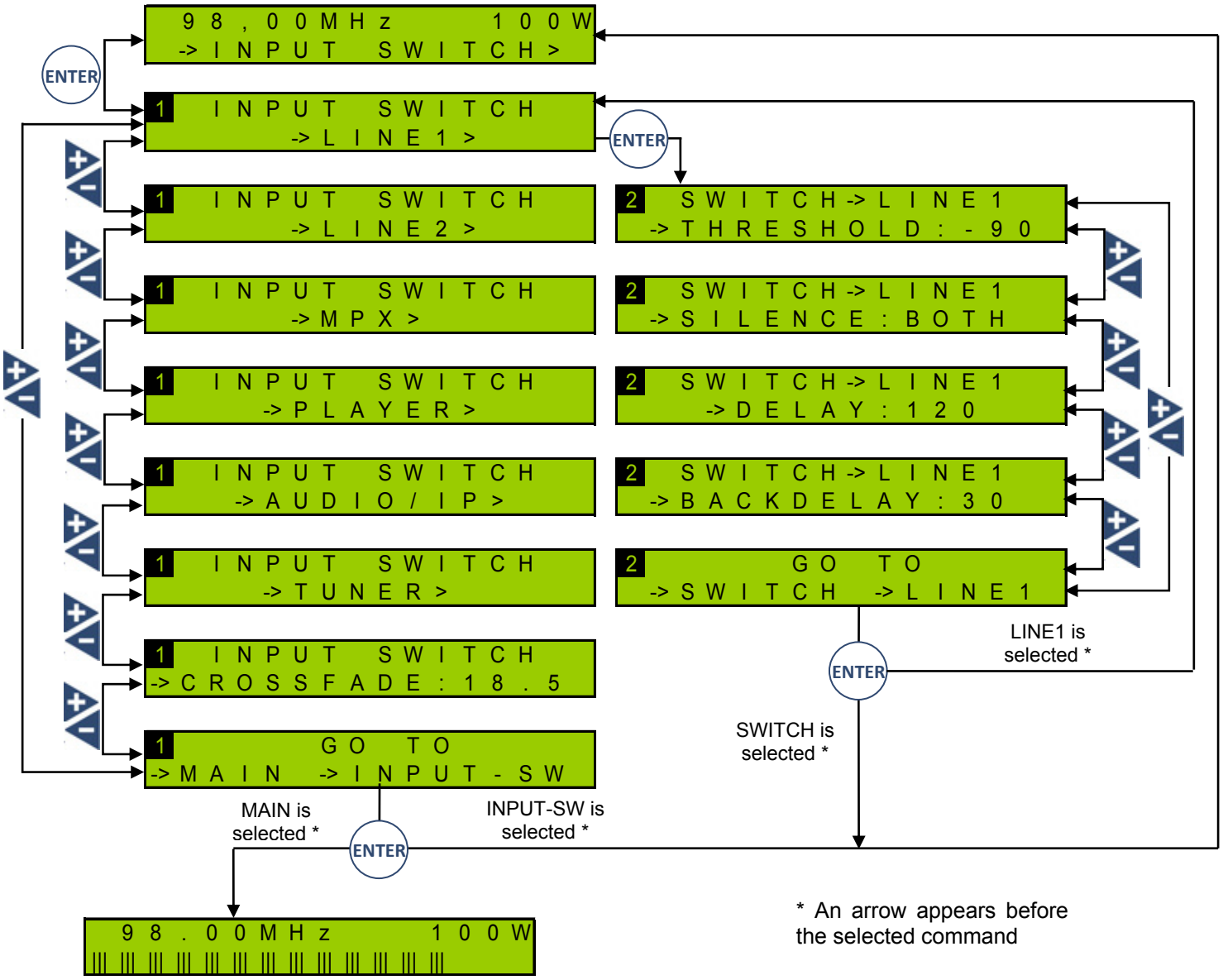
5.3.6. INPUT SWITCH Menu



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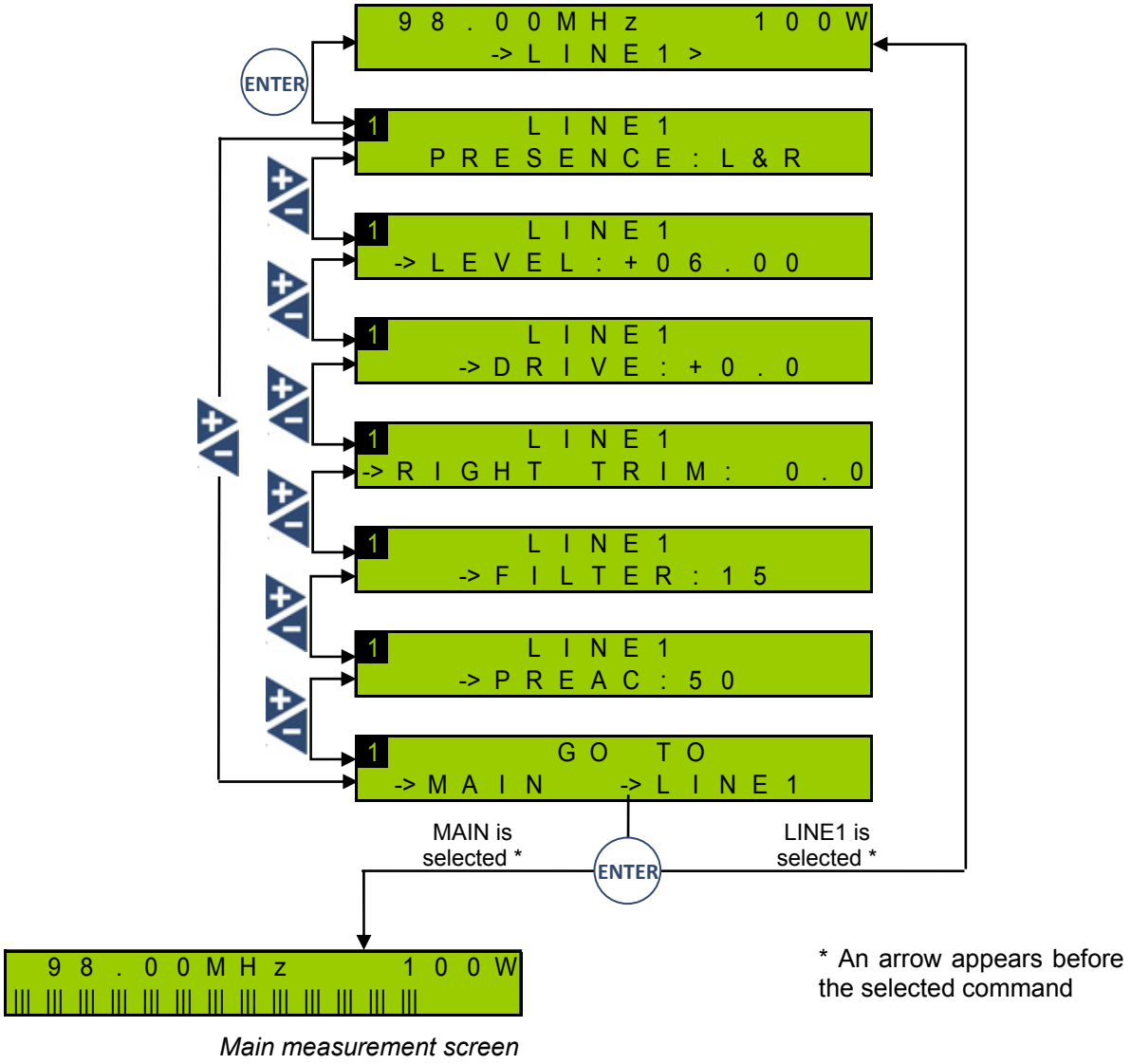
5.3.7. LINE1 Menu

(similar to the Line2 menu)



Main measurement screen

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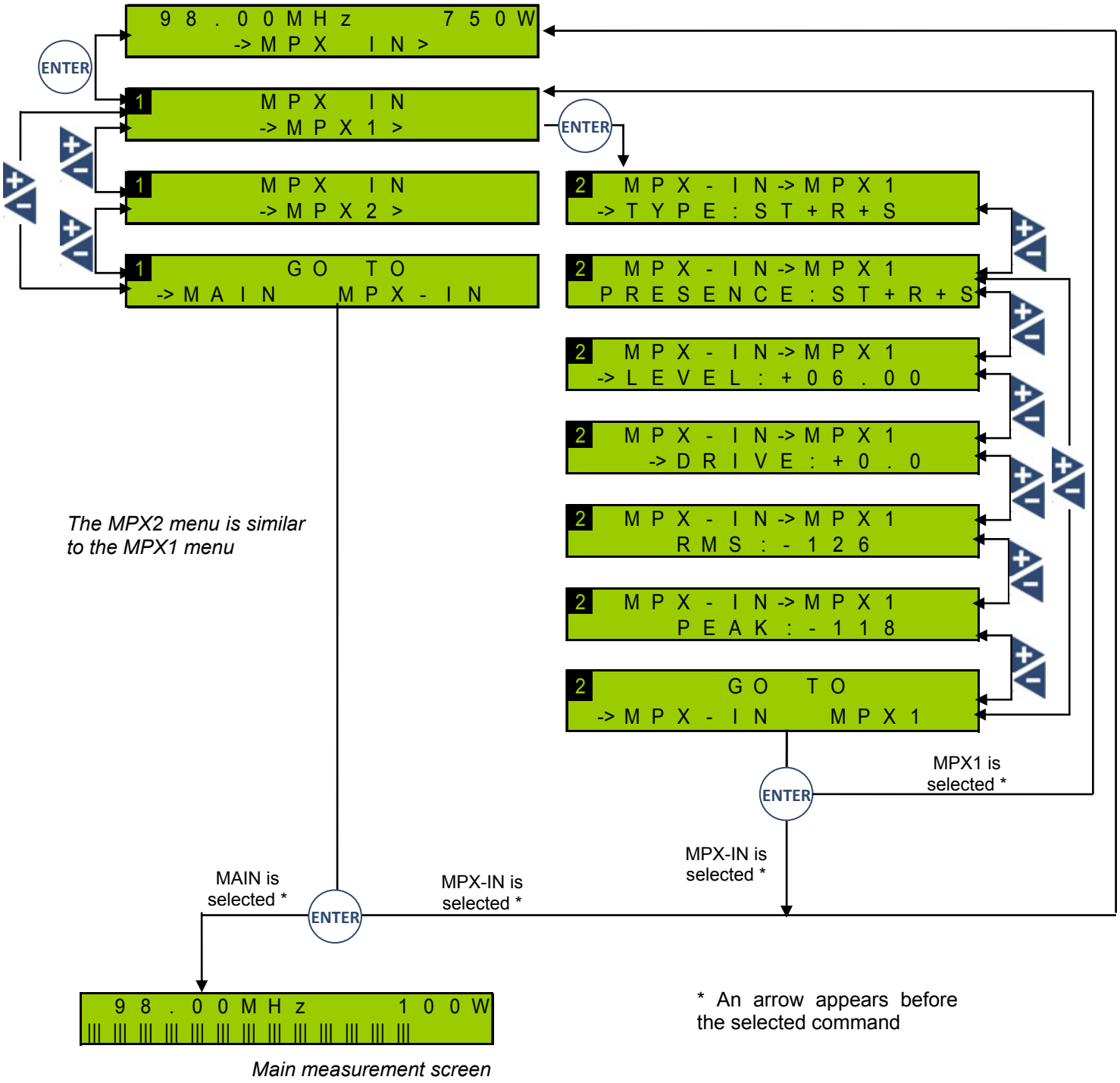
5.3.8. MPX in Menu



Main measurement screen

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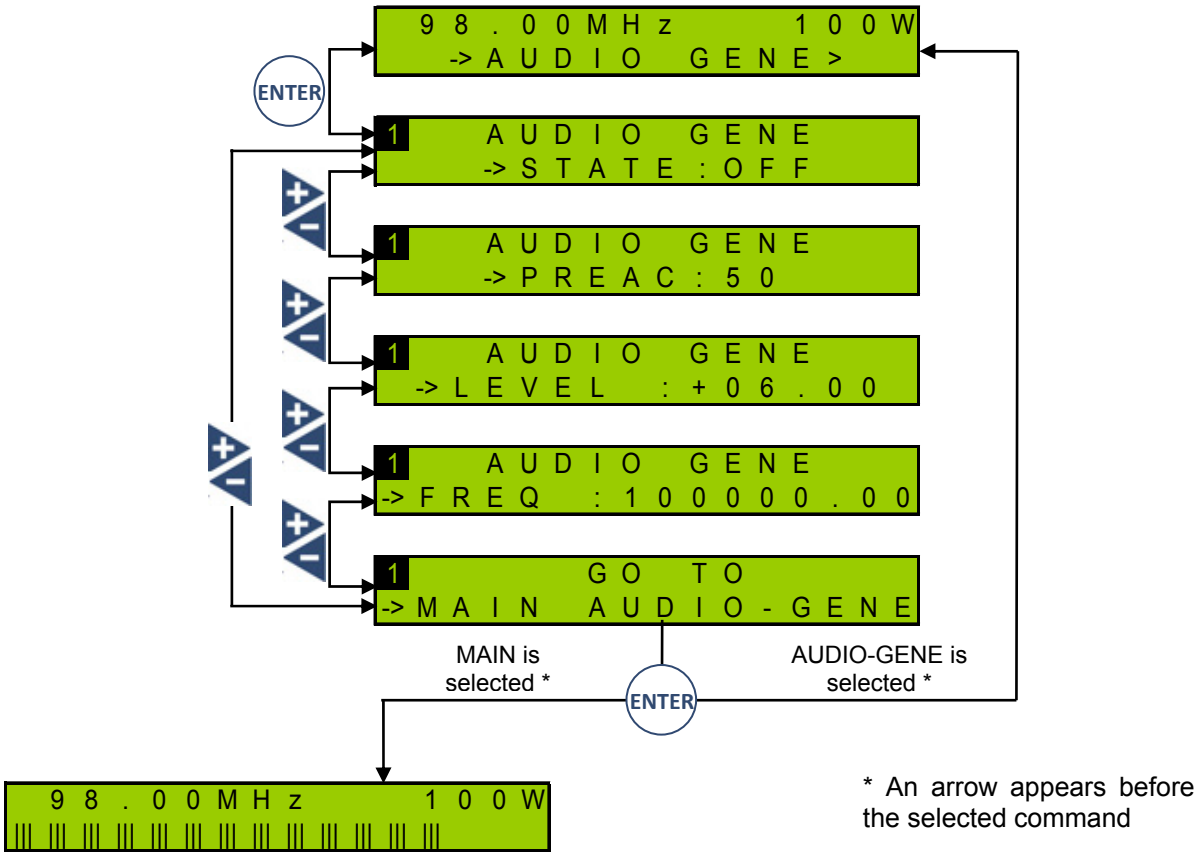
5.3.9. Audio Gene Menu



Main measurement screen

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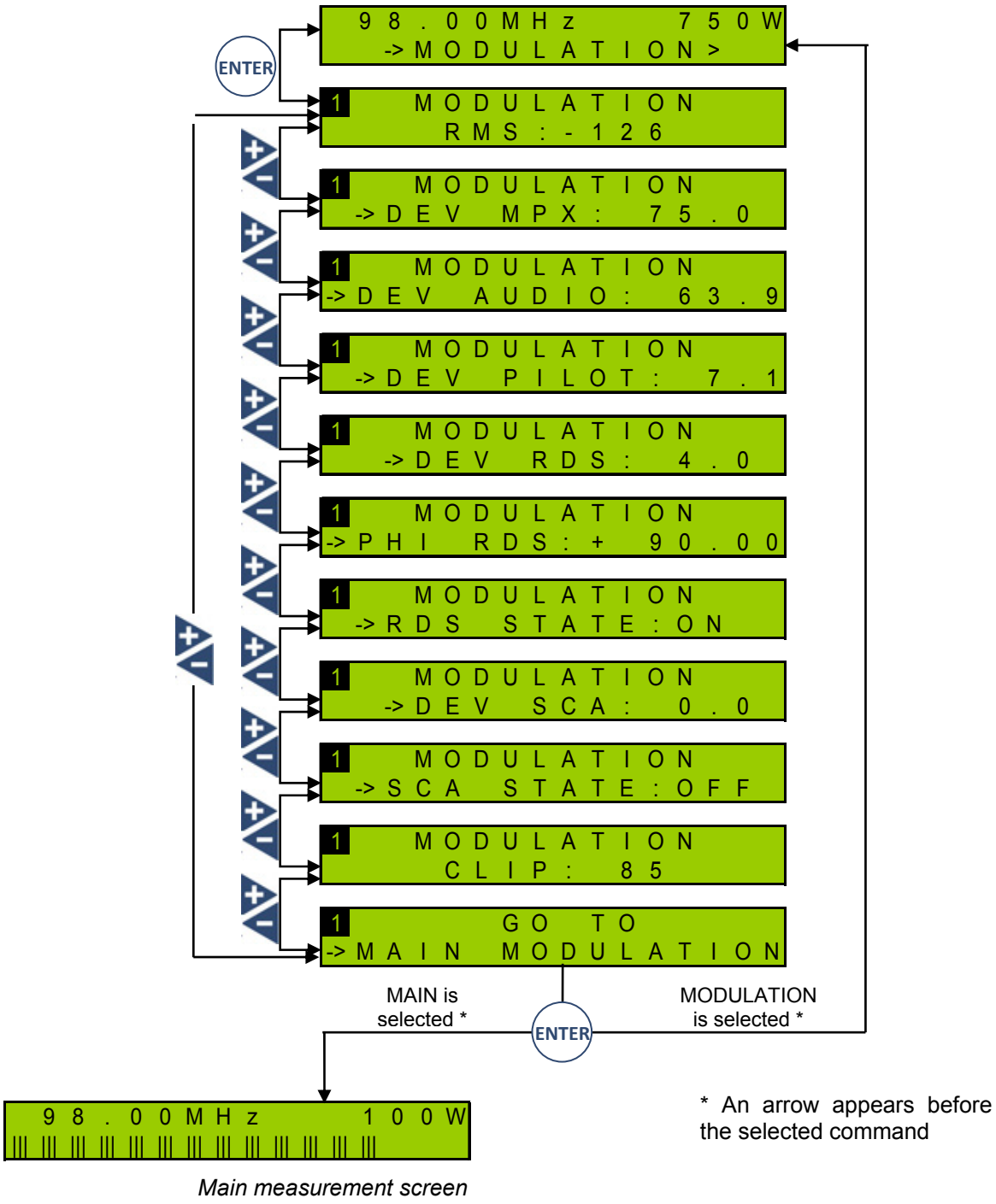
5.3.10. Modulation Menu



* An arrow appears before the selected command

Main measurement screen

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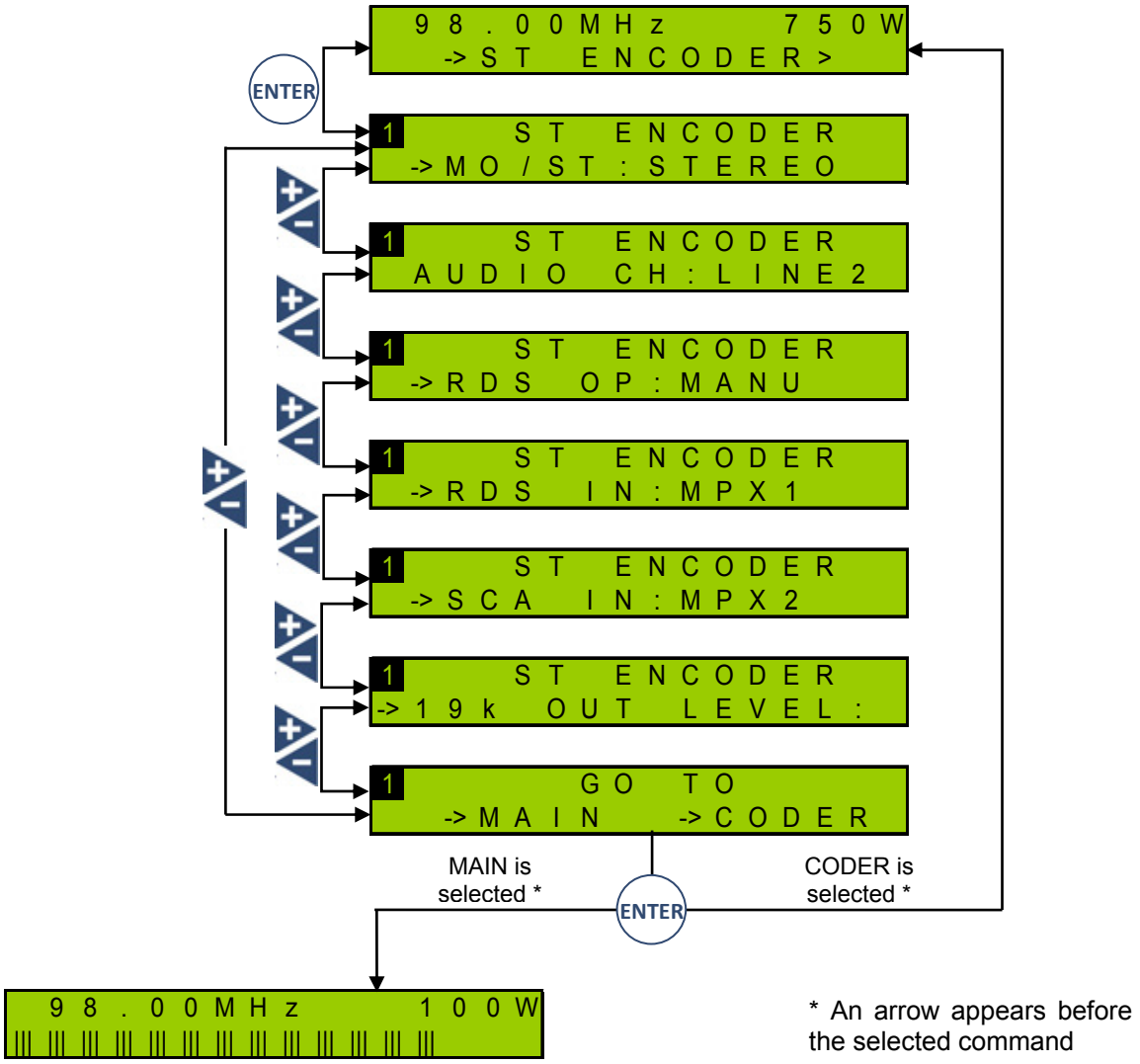
5.3.11. Stereo encoder Menu



* An arrow appears before the selected command

Main measurement screen

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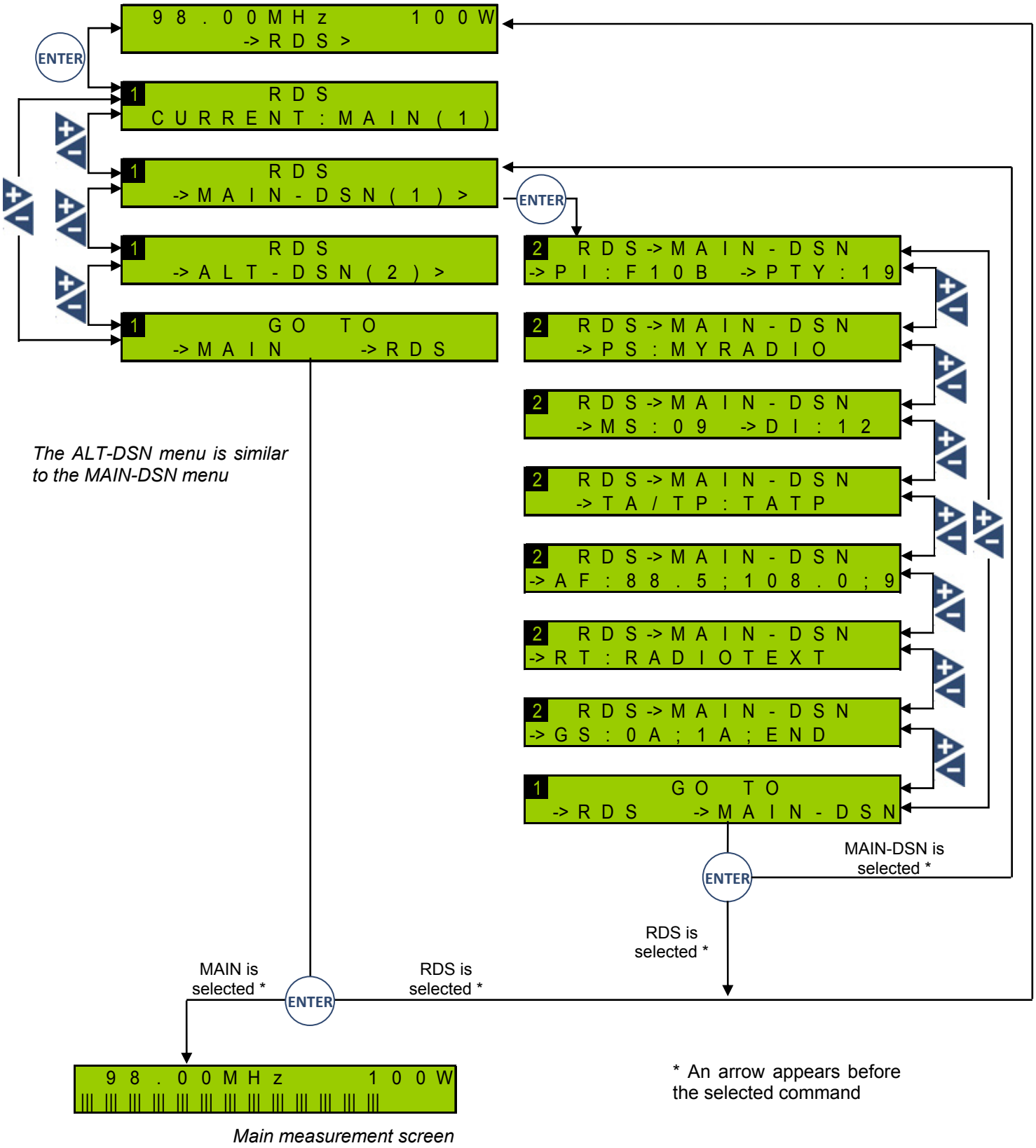
5.3.12. RDS Menu


98.00MHz 100W
-> RDS >
ENTER
1 RDS
CURRENT : MAIN (1)
1 RDS
-> MAIN - DSN (1) >
1 RDS
-> ALT - DSN (2) >
1 GO TO
-> MAIN -> RDS
2 RDS -> MAIN - DSN
-> PI : F10B -> PTY : 19
2 RDS -> MAIN - DSN
-> PS : MYRADIO
2 RDS -> MAIN - DSN
-> MS : 09 -> DI : 12
2 RDS -> MAIN - DSN
-> TA / TP : TATP
2 RDS -> MAIN - DSN
-> AF : 88.5 ; 108.0 ; 9
2 RDS -> MAIN - DSN
-> RT : RADIOTEXT
2 RDS -> MAIN - DSN
-> GS : 0A ; 1A ; END
1 GO TO
-> RDS -> MAIN - DSN
The ALT-DSN menu is similar to the MAIN-DSN menu
MAIN-DSN is selected *
RDS is selected *
MAIN is selected *
RDS is selected *
98.00MHz 100W
Main measurement screen
* An arrow appears before the selected command

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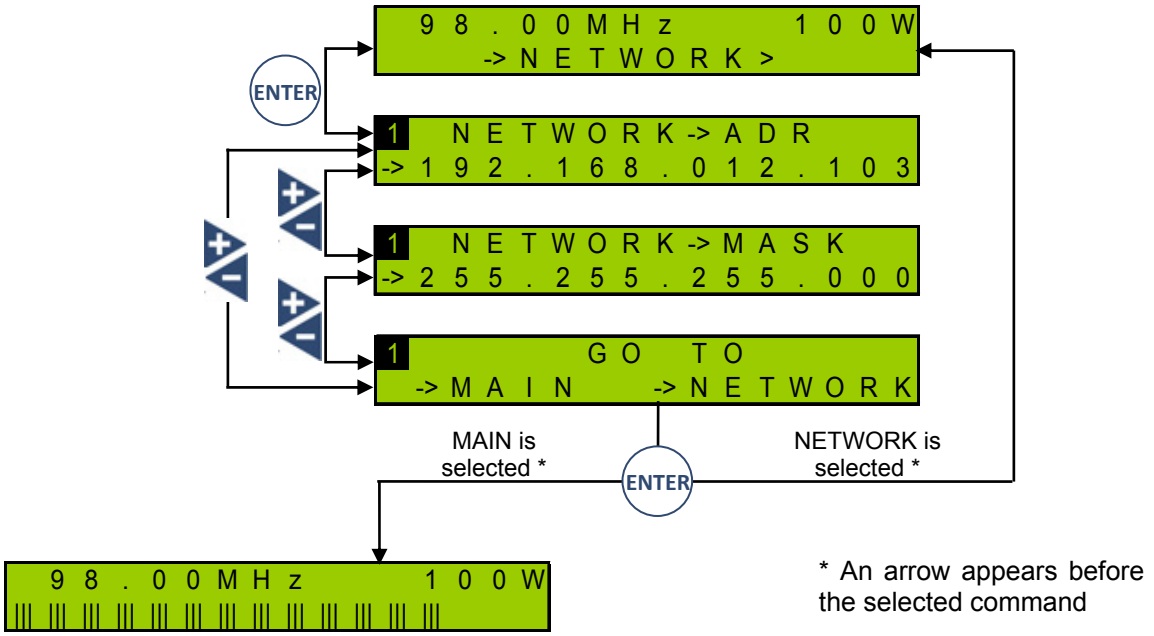
5.3.13. Network Menu



Main measurement screen

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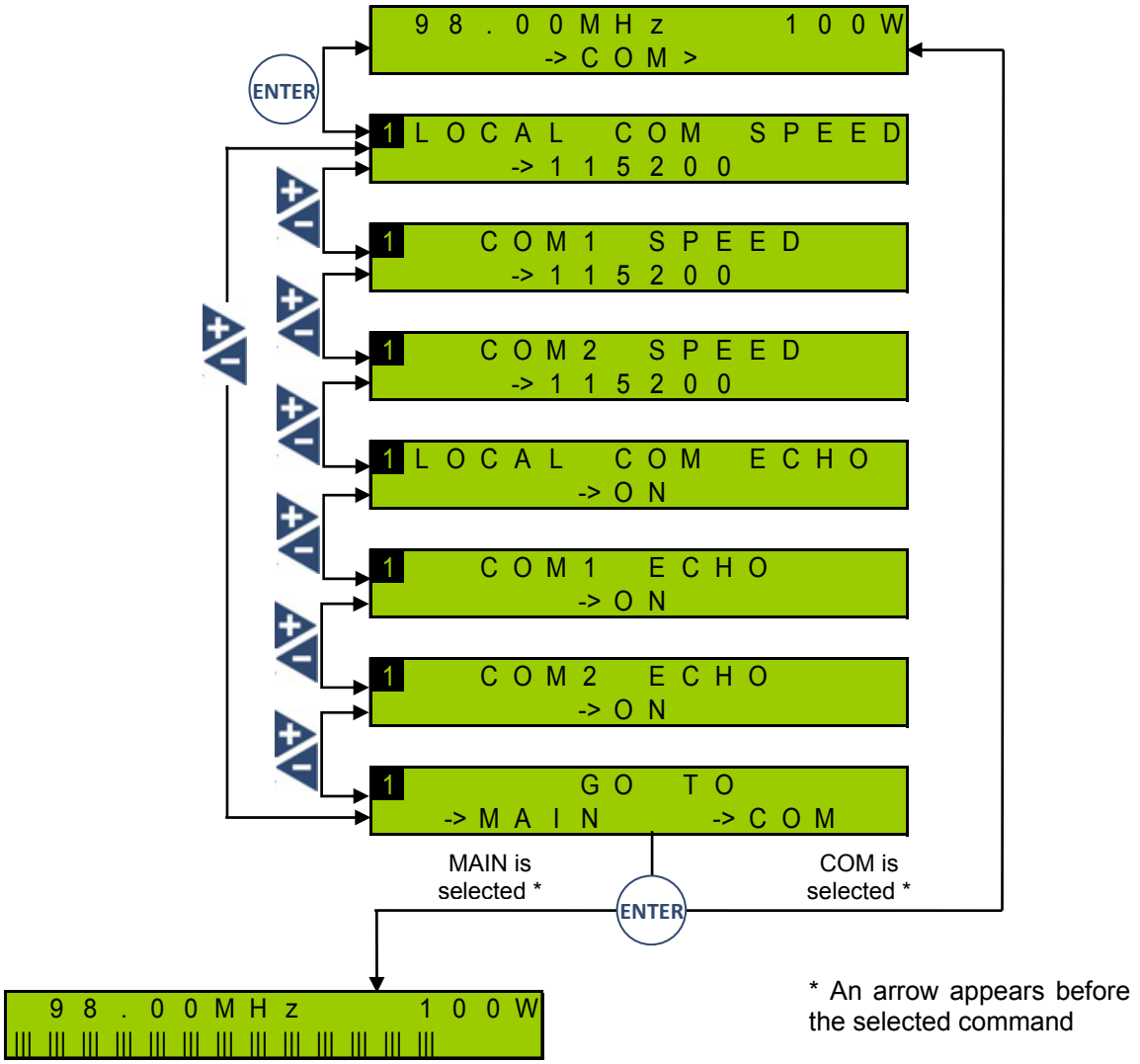
5.3.14. COM Menu



Main measurement screen

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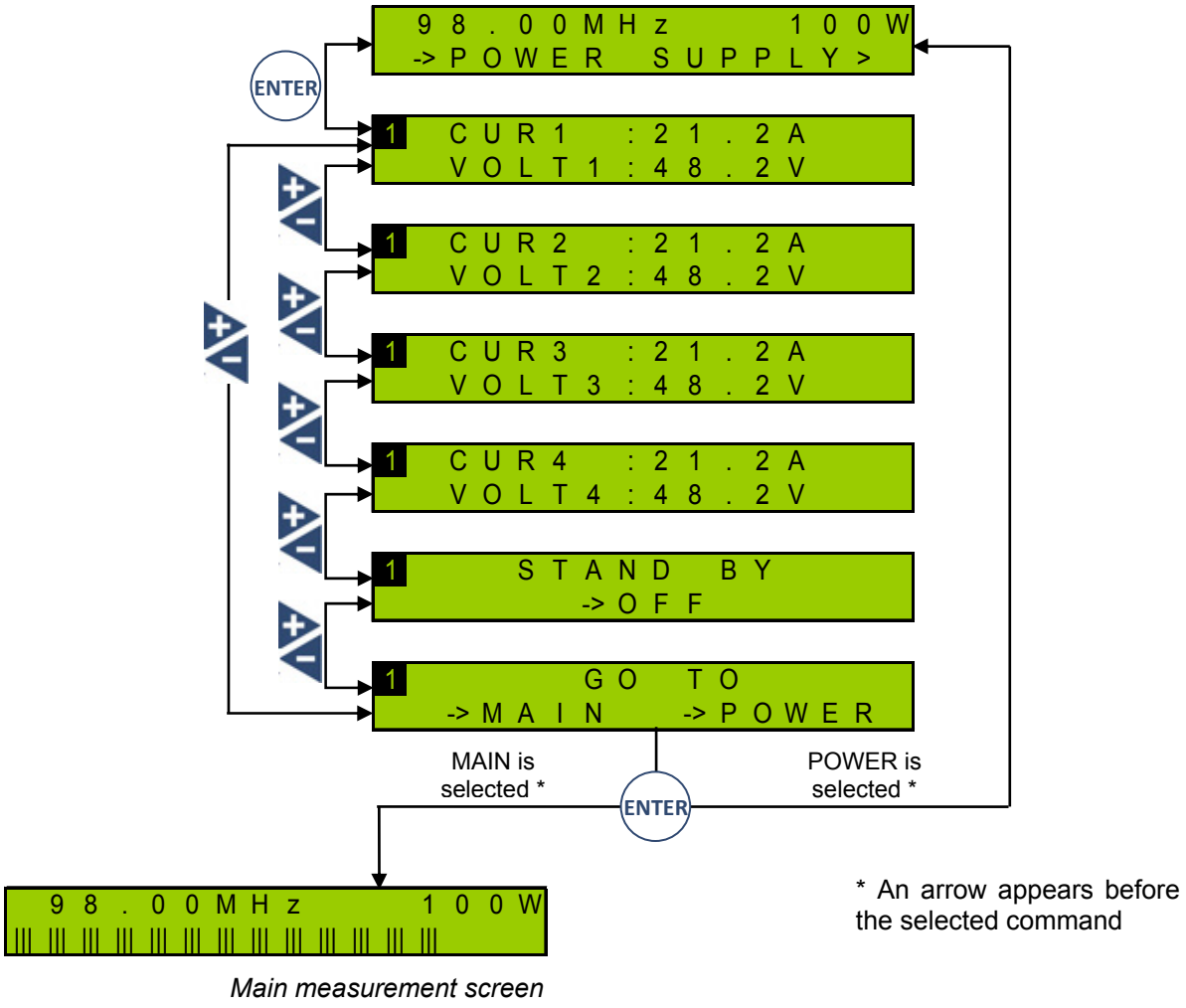
5.3.15. Power supply Menu



Main measurement screen

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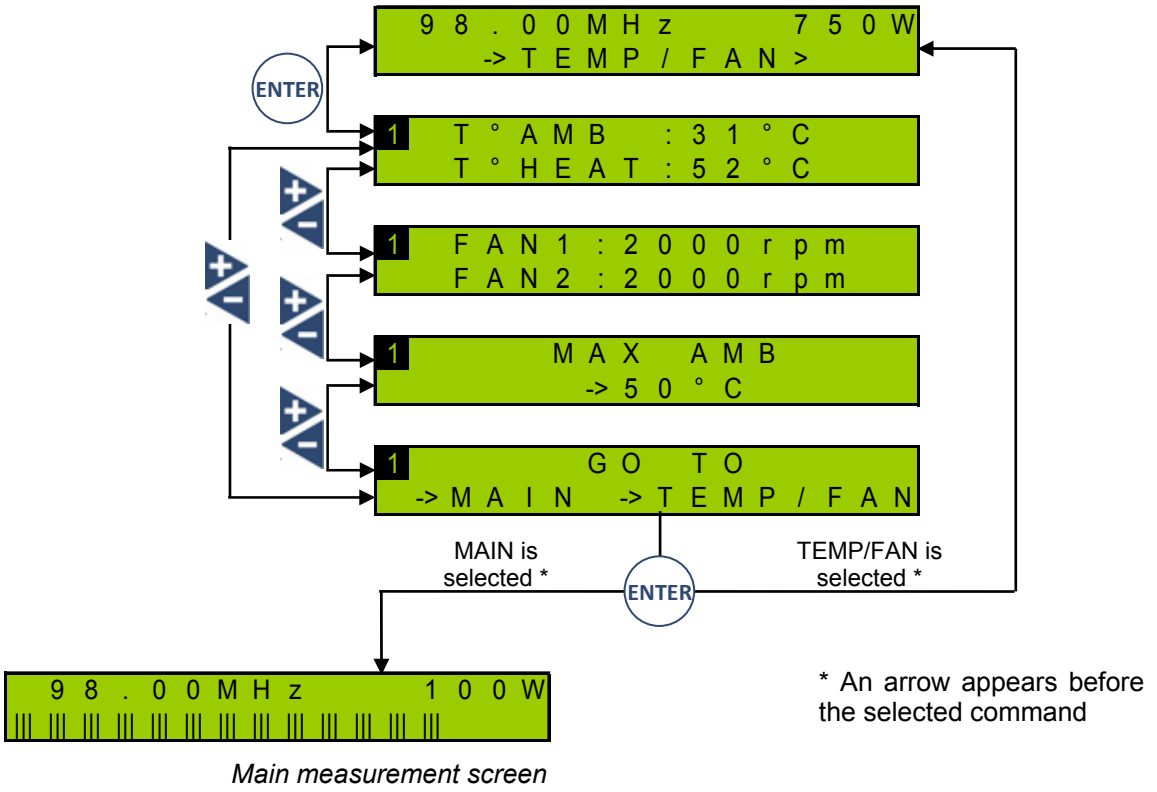
5.3.16. Temp/Fan Menu



Main measurement screen

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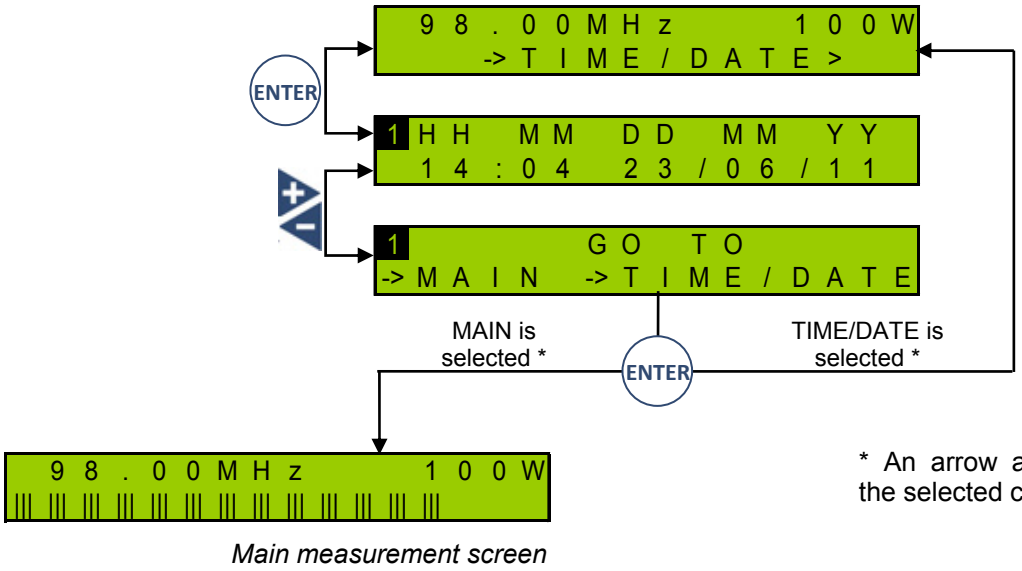
5.3.17. Time/Date Menu



* An arrow appears before the selected command

Main measurement screen

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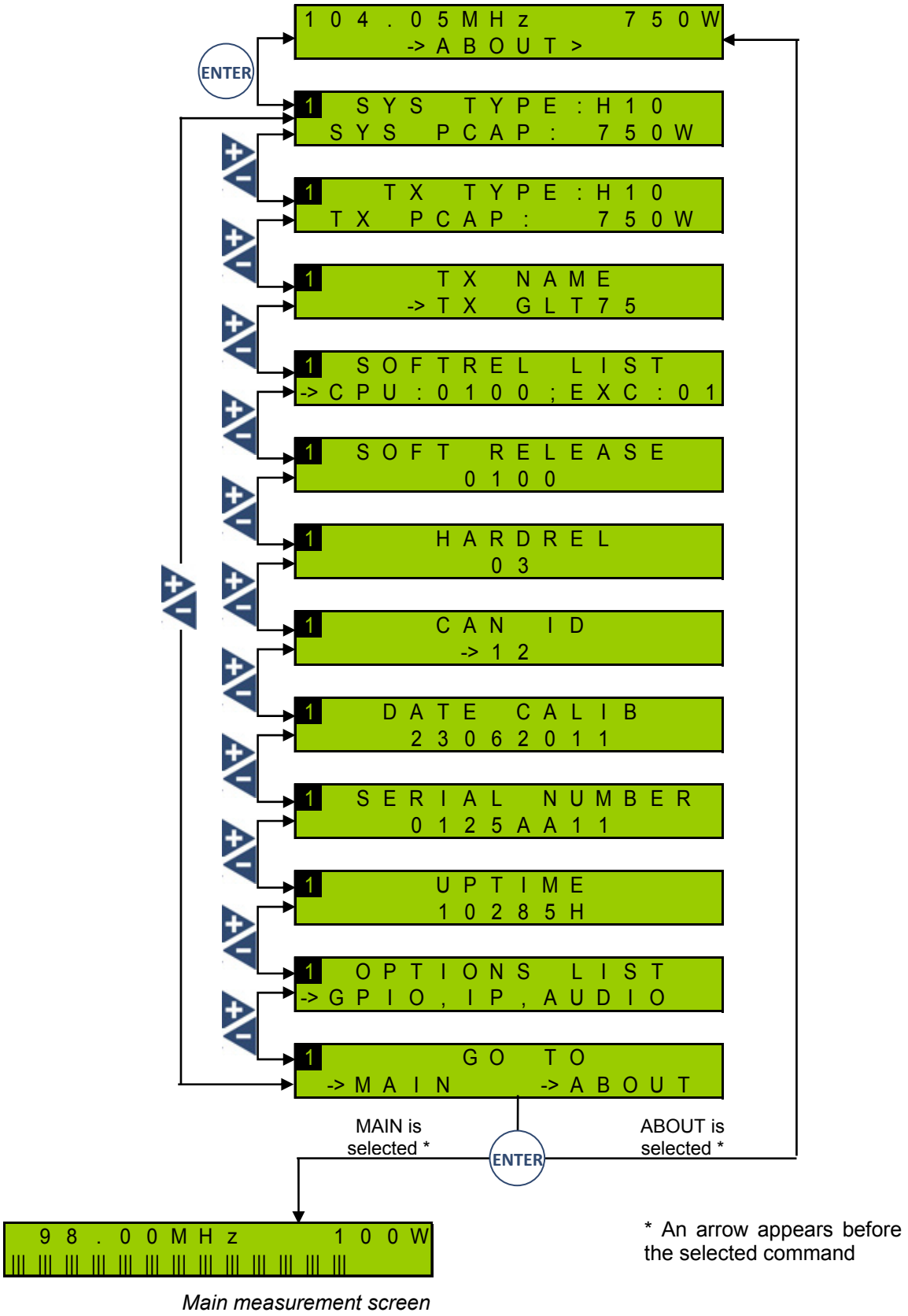
5.3.18. About Menu



Main measurement screen

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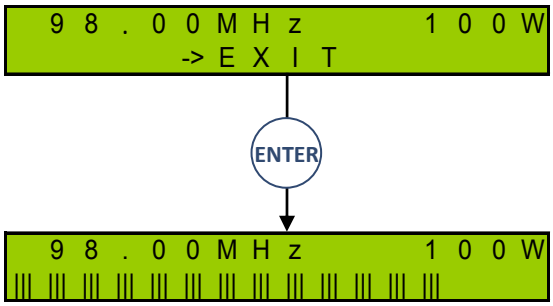
5.3.19. Exit Menu



Main measurement screen

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5.4. Main parameters description

Parameters are described for the main menus; serial commands are indicated in parenthesis. Possible values and/or value format are indicated for each parameter.

5.4.1. INPUT SELECT Menu

These parameters are available as INPUT serial commands (see section 6.2.5), but are managed differently: the PRIO parameter for each input sets the selection order for the various audio sources.

MODE

With this parameter, choose whether audio source selection is done manually or automatically. In manual mode, the user selected audio source is used regardless of the state of the audio source. In auto mode, the effective audio source depends directly on the switching configuration (set in the Input Switch menu) and on the channels selected as Main or as Backup (1, 2 or 3).

MANU or AUTO

MAIN

With this parameter, select the main audio source.

LINE1, LINE2, MPX1, MPX2 or GENE

BACKUP 1 / BACKUP 2 / BACKUP 3

With this parameters, select the audio sources which the transmitter will switch to in case of issue.

LINE1, LINE2, MPX1, MPX2 ou GENE

5.4.2. INPUT SWITCH Menu

This parameter is available as a CONF serial command (see section 6.2.3)

CROSSFADE (CONF.CROSSFADE) - – read/write
With this parameter, set the crossfade time between channels when switching from one to the next (in seconds).

From 0 to 25.5 s

LINE 1 or 2 / MPX / PLAYER sub menu

These parameters are available as INPUT.LINE1.SW / INPUT.LINE2.SW / INPUT.MPX.SW / INPUT.PLAYER.SW serial commands (see section 6.2.5).

THRESHOLD (INPUT.xx.SW.THRESH) – read/write

With this parameter, set the silence threshold level in dBFS on the selected channel.

From -90 to 0 dBFS

SILENCE (INPUT.xx.SW.SILENCE) – read/write

With this parameter, select the channel (L / R / L or R / L and R) on which silence detection must be performed.

L, R, ANY or BOTH

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DELAY (INPUT.xx.SW.DELAY) – read/write

With this parameters, set the switching delay in seconds when audio loss occurs.

From 1 to 120 s

BACK DELAY (INPUT.xx.SW.BACKDELAY) – read/write

With this parameters, set the delay before returning to the highest priority channel, in seconds.

From 0 to 30 s

5.4.3. Menu LINE 1 (ANA)

These parameters are available as INPUT.LINE1 serial commands (see section 6.2.5).

PRESENCE (INPUT.LINE1.PRESENCE) – read only

This parameter indicates the presence of audio signal at the input: none, left, right or L&R.

NONE, L, R, L&R

LEVEL (INPUT.LINE1.LEVEL) – read/write

This parameter is the max audio peak in dBu that can come from the transmitter on the LINE1 input. For example, if the audio peak from the source is +6 dBu, this parameter must be set to +6 dBu for optimal operation. If you do not know the audio source level, you may use an audio analyzer or display first level measurements on the front panel to read the LINE1 LEVEL. Be aware that if the level is poorly set the deviation may become too low or too high. This level is also called nominal level, i.e. the level producing the deviation as set in the Modulation menu.

From -18 dBu to +18 dBu

DRIVE (INPUT.LINE1.DRIVE) – read/write

With this parameter, you can slightly compensate the input audio level. It directly affects the final deviation. A negative value decreases the deviation; a positive value can increase the deviation and/or cause the MPX hard clipper to be used (if enabled) which in turn may lead to audio distortion. We recommend you leave it at 0 dB.

From -6 dB to +6 dB

RIGHT TRIM (INPUT.LINE1.TRIM) – read/write

With this parameter, you can correct the balance between the Left and Right channels. However, it is better to look for and correct the cause of a lack of balance (before the transmitter) rather than correcting it at this stage. A positive value increases the Right channel; a negative value decreases the Right channel level. It is best to leave it at 0 dB.

From -3 dB to +3 dB

FILTER (INPUT.LINE1.FLT) – read/write

This parameter is crucial: it set the low-pass filter applied on the audio input. The FM bandwidth is limited to 15 kHz, so **the filter must be set to 15 kHz for the FM**. Digital technology and the quality of the internal stereo encoder make it possible to set the filter at 16 or 17 kHz while maintaining an acceptable pilot

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protection. Select 0 kHz to disable the filter: this solution can be used in mono operation (in stereo operation, the incidence on the MPX signal and its sub-carrier would be too great) or when a 15 kHz filter is already used upstream as with an FM processor for instance. In this specific situation, you may also use 2 filters, the standard 15 kHz standard filter with the external processor, plus the 16 kHz transmitter filter. The listeners will hear the processor's filter; the internal filter will take the relay in case of issue with the processor.

0, 15, 16 or 17 kHz

PREACC (INPUT.LINE1.PREAC) – read/write

With this parameter, set the pre-emphasis. Select 0 µs is the audio signal is pre-emphasized before getting to the transmitter. Otherwise, select according to the country: 50 µs in Europe, 75 µs in the USA.

0, 50 or 75 µs

5.4.4. LINE 2 Menu (AES)

These parameters are available as INPUT.LINE2 serial commands (see section 6.2.5).

They are identical to LINE1 menu parameters, except for the level.

LEVEL (INPUT.LINE2.LEVEL) – read/write

This parameter is the max audio peak in dBu that can come from the transmitter on the LINE2 input. For example, if the audio peak from the source is -4 dBFS, this parameter must be set to -4 dBFS for optimal operation. If you do not know the audio source level, you may use an audio analyzer or display first level measurements on the front panel to read the LINE2 LEVEL. Be aware that if the level is poorly set the deviation may become too low or too high. This level is also called nominal level, i.e. the level producing the deviation as set in the Modulation menu.

From -20 dBFS to 0 dBFS

5.4.5. MPX IN Menu

MPX1 or MPX2 Sub-menu

These parameters are available as INPUT.MPX1 / INPUT.MPX2 serial commands (see section 6.2.5).

TYPE (INPUT.MPXn.TYPE) – read/write

This parameter applies a filter to extract the type of signal needed on the MPXn input. This filtered signal will become the MPXn channel audio signal. Note that when switching from stereo to mono, the total deviation is maintained.

MO (mono), ST (stereo), ST+R+S (stereo+RDS+SCA), ST+R (stereo+RDS), RDS, R+S (RDS+SCA), SCA or NONE

PRESENCE (INPUT.MPXn.PRESENCE) – read only

Indique la composition du signal sur l'entrée MPXn.

MO (mono), MO+R (mono+RDS), MO+R+S (mono+RDS+SCA), ST (stereo), ST+R (stereo+RDS) ou ST+R+S (stereo+RDS+SCA)

LEVEL (INPUT.MPXn.LEVEL) – read/write

This parameter is the max audio peak in dBu that can come from the transmitter on the MPX input. For example, if the audio peak from the source is +6 dBu, this parameter must be set to +6 dBu for optimal operation. If you do not know the audio source level, you may use an audio analyzer or display first level

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measurements on the front panel to read the MPXn LEVEL. Be aware that if the level is poorly set the deviation may become too low or too high. This level is also called nominal level, i.e. the level producing the deviation as set in the Modulation menu.

From -18 dBu to +18 dBu

DRIVE (INPUT.MPXn.DRIVE) – read/write

With this parameter, you can slightly compensate the input audio level. It directly affects the final deviation. A negative value decreases the deviation; a positive value can increase the deviation and/or cause the MPX hard clipper to be used (if enabled) which in turn may lead to audio distortion. We recommend you leave it at 0 dB.

From -6 dB to +6 dB

RMS (INPUT.MPXn.RMS) – read only

This parameter indicates the average value of the transmitted signal's excursion in kHz.

From -150 to +150 kHz

PEAK (INPUT.MPXn.PEAK) – read only

This parameter indicates the peak value of the transmitted signal's excursion in kHz.

From -150 to +150 kHz

5.4.6. AUDIO GENE Menu

The audio generator is a multiplex channel and is therefore not affected by the stereo encoder parameters.

These parameters are available as INPUT.AUDIOGEN serial commands (see section 6.2.5).

STATE (INPUT.AUDIOGEN.STATE) – read/write

With this parameter, set the type of MPX signal generated by the internal generator.

OFF, PILOT, L, R, L+R (mono) or L-R (stereo)

PREAC (INPUT.AUDIOGEN.PREAC) – read/write

With this parameter, set the pre-emphasis. Select 0 µs is the audio signal is pre-emphasized before getting to the transmitter. Otherwise, select according to the country: 50 µs in Europe, 75 µs in the USA.

0, 50 or 75 µs

LEVEL (INPUT.AUDIOGEN.LEVEL) – read/write

With this parameter, set the internal generator audio level.

From -100.00 to 12.00 dBFS

FREQ (INPUT.AUDIOGEN.FREQ) – read/write

With this parameter, set the internal generator audio frequency.

From 0 to 100000.00 Hz

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5.4.7. MODULATION Menu

These parameters are available as MEAS.DEV and CONF serial commands (see section 6.2.2 and 6.2.3).

RMS (MEAS.DEV.RMS) – read only

This parameter indicates the average value of the transmitted signal's excursion in kHz.

From -150 to +150 kHz

DEV MPX (CONF.DEV.MPX) – read/write

With this parameter, set the maximum MPX deviation in kHz generated when the audio source is at the nominal level (the nominal level is set with the LEVEL parameter of the menus: LINE1, LINE2, MPX1 or MPX2). It is often set at 75 kHz but this value may vary according to the country and relevant regulatory authorities. To ensure the sub-carrier levels remain stable, this parameter directly changes the audio deviation.

From 0 to 150.00 kHz

DEV AUDIO (CONF.DEV.AUDIO) – read/write

With this parameter, set the maximum audio deviation in kHz generated when the audio source is at the nominal level (the nominal level is set with the LEVEL parameter of the menus: LINE1, LINE2, MPX1 or MPX2). The audio deviation is set automatically when the MPX deviation parameter is set; however, it is possible to set the audio deviation rather than the MPX deviation. Increasing or decreasing the audio deviation affects the total deviation and thus automatically adjusts the MPX deviation. Make sure to avoid overmodulation.

From 0 to 150.00 kHz

DEV PILOT (CONF.DEV.PILOT) – read/write

With this parameter, set the 19 kHz pilot deviation. For countries modulating at 75 kHz, the pilot deviation should be 10% of the total deviation, i.e. 7.5 kHz without RDS or 7.1 kHz if RDS is used.

From 0 to 25.5 kHz

DEV RDS (CONF.DEV.RDS) – read/write

With this parameter, set the RDS sub-carrier deviation. The most widely used value is 4 kHz.

From 0 to 25.5 kHz

PHI RDS (CONF.PHASE.RDS) – read/write

With this parameter, set the RDS sub-carrier phase in relation to the pilot sub-carrier. We recommend setting it at 90°.

From -180 à to180°

RDS STATE (CONF. STATE.RDS) – read/write

With this parameter, enable or disable the RDS. When the RDS is enabled or disabled, the RDS deviation is automatically subtracted from or added to the audio deviation to maintain the same total deviation.

Off/On

DEV SCA (CONF.DEV.SCA) – read/write

With this parameter, set the SCA deviation (auxiliary sub-carrier other than RDS), as needed.

From 0 to 25.5 kHz

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SCA STATE (CONF. STATE.SCA) – read/write

With this parameter, enable or disable the SCA. When the SCA is enabled or disabled, the SCA deviation is automatically subtracted from or added to the audio deviation to maintain the same total deviation.

Off/On

CLIP (CONF. DEV.CLIP) – read/write

With this parameter, set the MPX hard clipper to prevent any possibility of overmodulation on the modulator itself. This process is carried out digitally right before the RF generation, and is therefore enabled on all the inputs. If the deviation is greater than the configured value (in kHz), the MPX hard clipper is automatically enabled. Unlike FM limiters/clippers used in audio processing, this clipper cannot be used continuously for it generates a noticeable audio distortion. It is therefore best to set it at 0, or at the maximum authorized deviation, plus a few kHz to ensure additional security with the audio processor.

From 0 to 200

5.4.8. STEREO ENCODER Menu

These parameters are available as CODER serial commands (see section 6.2.6).

MO/ST (CODER.MOST) – read/write

With this parameter, set the stereo generator in mono or stereo mode. For mono, there are 3 options: Left channel broadcast in mono (Mono_L), right channel broadcast in mono (Mono_R), the sum Left+Right broadcast in mono (Mono). Otherwise left and right channels are broadcasted in stereo.

STEREO, MONO, MONO_L or MONO_R

AUDIO CH (CODER.SELECT.AUDIO) – read only

This parameter indicates the channel used by the modulator for the audio, as set with the INPUT.SELECT menu.

NONE, AUTO, LINE1, LINE2, MPX1, MPX2 or GENE

RDS CH (CODER.CURRENT.RDS) – read only

This parameter indicates the channel used by the modulator for the RDS, as set with the RDS IN parameter.

NONE, MPX1, MPX2 or INTERNAL

RDS OP (CODER.RDS.OPERATION) – read/write

With this parameter, on loss of RDS in the MPX, add RDS either automatically or manually.

Auto or Manu

RDS IN (CODER.SELECT.RDS) – read/write

With this parameter, set the RDS component source of the broadcast signal either with an external source or with the internal encoder.

MPX1, MPX2 or INTERNAL

SCA IN (CODER.SELECT.SCA) – read/write

With this parameter, set the SCA component source of the broadcast signal

MPX1 or MPX2

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19k OUT LEVEL (CODER.19KOUT.LEVEL) – read/write

With this parameter, enable/disable the rear panel 19 kHz clock and set its output level. 0=off; between 1 and 7: set a level between 0.9 and 1.1 V peak-to-peak. 5 corresponds to 1 V.

From 0 to 8

5.4.9. RDS Menu

With the Basic RDS option, configure up to 2 DSNs each with a main PSN. Among other things, the DSNs allow fast and easy changing of the encoder settings remotely.

Note: the RDS is enabled in the STEREO ENCODER menu.

These parameters are available as RDS serial commands (see section 6.2.7).

CURRENT MAIN (RDS.DSN)

This parameter indicates the current DSN number.

MAIN DSN sub-menu

PI (RDS.MAINDSN.PI) – read/write

With this parameter, set the PI code (Program Identifier) used by RDS receivers to identify the station while searching for a frequency using AF or EON-AF codes.

4-digit hexadecimal code

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PTY (RDS.MAINDSN.PTY) – read/write

With this parameter, set the PTY (Program Type). Select on 32 RDS or RDBS preset codes as given in the table below.

From 0 to 31

PTY code	RDS Programme type (EU)	RBDS Program type (USA)
0	No programme type or undefined	No program type or undefined
1	News	News
2	Current affairs	Information
3	Information	Sports
4	Sport	Talk
5	Education	Rock
6	Drama	Classic Rock
7	Culture	Adult Hits
8	Science	Soft Rock
9	Varied	Top 40
10	Pop Music	Country
11	Rock Music	Oldies
12	M.O.R. Music	Soft
13	Light classical	Nostalgia
14	Serious classical	Jazz
15	Other Music	Classical
16	Weather	Rhythm and Blues
17	Finance	Soft Rhythm and Blues
18	Children's programmes	Language
19	Social Affairs	Religious Music
20	Religion	Religious Talk
21	Phone In	Personality
22	Travel	Public
23	Leisure	College
24	Jazz Music	Unassigned
25	Country Music	Unassigned
26	National Music	Unassigned
27	Oldies Music	Unassigned
28	Folk Music	Unassigned
29	Documentary	Weather
30	Alarm Test	Emergency Test
31	Alarm	Emergency

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PS (RDS.MAINDSN.PS) – read/write

With this parameter, set the PS (Program Station)

8-digit code

MS (RDS.MAINDSN.MS) – read/write

With this parameter, indicate whether the program is Music or Speech to automatically adjust the sound level of the RDS receiver.

0 (music) or 1 (speech)

DI (RDS.MAINDSN.DI) – read/write

With this parameter, set the DI (Decoder Identification) which enables an RDS receiver's audio level to be adjusted according to the type of received audio (mono or stereo, static or dynamic PTY, compressed or not, with or without artificial head).

From 0 to 15, as indicated in the table below.

	Mono / Stereo	With / Without artificial head	Compressed / non compressed	static / dynamic PTY
0	mono	without	non	static
1	mono	without	non	dynamic
2	mono	without	compressed	static
3	mono	without	compressed	dynamic
4	mono	with	non	static
5	mono	with	non	dynamic
6	mono	with	compressed	static
7	mono	with	compressed	dynamic
8	stereo	without	non	static
9	stereo	without	non	dynamic
10	stereo	without	compressed	static
11	stereo	without	compressed	dynamic
12	stereo	with	non	static
13	stereo	with	non	dynamic
14	stereo	with	compressed	static
15	stereo	with	compressed	dynamic

TA/TP (RDS.MAINDSN.TATP / RDS.MAINDSN.TA / RDS.MAINDSN.TA) – read/write

With this parameter, enable or disable the TA (Traffic Announcement) / TP (Traffic Program). Enabling the TA instantaneously switches an RDS receiver onto road information reports; at the end of the report, the receiver will automatically go back to its former operating state. Enabling the TP shows RDS receivers that the allocated station is likely to broadcast road information. You may enable both the TA and the TP, the TP only or neither.

TATP, TP or OFF

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AF (RDS.MAINDSN.AF) – read/write

With this parameter, set up to 25 alternative frequencies in MHz with the method A. A RDS receiver will shift to an alternative frequency when the set frequency is no longer properly received.

XX;XX; …;XX

RT (RDS.MAINDSN.RT) – read/write

With this parameter, display and set the radiotext, function which enables text messages to be broadcast in groups of 64 characters. RDS receiver can only benefit from this function if fitted with a specific display (home receivers, Smartphone mobile receivers). The RT function cannot be used on car radios as road safety commissions have forbidden its use on board a vehicle.

GS (RDS.MAINDSN.GS) – read/write

With this parameter, set the group sequence (32 max) which must include at least one group 0A.

XX;XX; …;XX

Parameters of the ALT DSN sub-menu are identical to those of the MAIN DSN sub-menu; for serial commands, use ALT instead of MAIN.

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6. SERIAL COMMANDS

6.1. Working principle

Helios FM 20100 W has a serial interface. The physical connection is done using the SUB-D9 (SERIAL MONITOR) on the front panel. A common computer with an RS 232 interface (example: PC+ Windows + Hyper-Terminal) is all you need to send commands. The dialog is in text mode (ASCII) and no specific software is required.

Like all serial PC connected equipment, a good cable and correct communication settings are essential to ensure good communication. The cable must be a straight cable (not crossover), with a female plug to connect to the PC, and male plug to connect to the unit.

To avoid problems during connection, set the same communication speed and identical settings for both devices. See figure 'Port parameters".

-> 9600	bits per second
-> 8	data bits
-> No	Parity
-> 1	Stop bit
-> No	Handshaking

The commands make it possible to read the functional parameters (R) or even to edit some of them (W).

To retrieve the value of a functional parameter, simply enter the command name and press the <Enter> key.

Example:

To display the status of the 3 dB alarm, type:

```
ALARM.3DB
```

The answer, `ON` or `OFF` will indicate the 3 dB alarm is on or not.

To set a parameter, type the command name, the equal sign, the new value and press the <Enter> key.

Example:

To set the transmitter working mode (local or remote), type:

```
CONF.MODE=LOCAL
```

The answer: `LOCAL` will indicate the command has been implemented. In case it has not, the message `ERROR CMD` will appear.

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6.2. Serial commands

6.2.1. System commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
SYS.RST	W		Reset of all parameters.
SYS.RST.CPU	W	"RST"	General reset of the µc. Sends the return code: RST
SYS.RST.EXC	W		General reset of the exciter
SYS.RAZ	W	"RAZ"	Reloads NVRAM default values
SYS.TYPE	R	xxx x=[A..Z;0..9]	Unit type: example "G75" for Goliath 750 W
SYS.PCAP	R	[0..999]	Nominal power of the unit: example "300"=>300 W
SYS.SOFTREL	R	xx.xx.xx x=[0..9]	Software version: example "3.0.1"
SYS.SOFTREL.LIST	R	xx.xx.xx x=[0..9]	List of the exciter software versions CPU;DSP;FPGA;IP;EXC;A/IP;TUN
SYS.HARDREL	R	xx.xx.xx x=[0..9]	Hardware version: example "3.0.1"
SYS.NAME	R/W	XXXX X=[A…Z]	Equipment name
SYS.TIME	R/W	HH:MM:SS	Reads and sets the amplifier time
SYS.DATE	R/W	DD/MM/YY	Reads and sets the amplifier date
SYS.LOCALCOM.SPEED	R/W	9600,19200,38400,57600,115200	Speed of the front panel serial port
SYS.COM1.SPEED	R/W	9600,19200,38400,57600,115200	Speed of the rear panel serial port 1
SYS.COM2.SPEED	R/W	9600,19200,38400,57600,115200	Speed of the rear panel serial port 2
SYS.COM1.ECHO	R/W	"ON" or "OFF"	Adds the local echo on the rear panel serial port
SYS.COM2.ECHO	R/W	"ON" or "OFF"	Adds the local echo on the rear panel serial port
SYS.LOCALCOM.ECHO	R/W	"ON" or "OFF"	Adds the local echo on the front panel serial port
SYS.PASSWORD	R/W	xxx x=[A..Z;0..9]	Password for the console and front panel display. 'NONE' disables the password
SYS.PASSWORD.RESET	R/W	xxx x=[A..Z;0..9]	Creates a text string to unlock the password if it has been forgotten
SYS.LOG	R		
SYS.CID	R/W	[0..31]	Unit identifier used by the CAN bus.
SYS.DATE.CALIB	R	DDMMYYYY	Date of the last calibration
SYS.SN	R	YYMMXXXX A,M,X=[0..9]	Serial number of the unit: Y => year, M => month, X => number
SYS.UPTIME	R	[0..99999999]	Indicates the number of working hours since commissioning
SYS.OPT.LIST	R	RF,RC,AIP,TUN,IP,COM,REC	List of implemented options
SYS.IP.ADR	R/W	XXX.XXX.XXX.XXX X=[0…9]	IP address of the optional IP board
SYS.IP.MASK	R/W	XXX.XXX.XXX.XXX X=[0…9]	IP mask of the optional IP board
SYS.GPIO.IN.ACT	R	XX X=[A..F;0..9]	Indicates the corresponding RC when managed manually (see SYS.GPIO.IN.MASK)
SYS.GPIO.OUT.ACT	R/W	XX X=[A..F;0..9]	Enables the corresponding RM when managed manually (see SYS.GPIO.OUT.MASK)
SYS.GPIO.IN.MASK	R/W	XX X=[A..F;0..9]	Sets the RC control either by the control board or manually. Hexadecimal code: each bit corresponds to an input. Ex: A1 (10100001) indicates the RC 1, 6 and 8 are managed manually

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NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
SYS.GPIO.OUT.MASK	R/W	XX X=[A..F;0..9]	Sets the RM control either by the control board or manually. Hexadecimal code: each bit corresponds to an input: Ex: 21 (00100001) indicates RM 1 and 6 are managed manually.
SYS.LOG.CLR	W		Clears the event list
SYS.NAME	R/W	XX X=[A..F;0..9]	Unit name
LOGIN	R/W	XXXX,X=[0…z] "LOGGED" ou "NOT LOGGED"	Logs the user and allows them to update variables if the password is correct. Returns Logged or not logged
LOGOUT	W		Logs out the user and locks all variables.

6.2.2. Measurement commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
MEAS.PFWD	R	[0..9999]	Measure of direct power. examples: "20" or "300" => 300 W
MEAS.PREF	R	xxx.x x=[0..9]	Measure of reflected power: "20" => 2 W
MEAS.AMB	R	±[0..125]	Measures the ambient temperature from 0 to 125°C. "52"=>52°C.
MEAS.VSWR	R	XX.X X=[0..9]	VSWR measure "01.0" or "20.0"
MEAS.DEV.RMS	R	-150.0…150.0	Gives the average value for the signal deviation in kHz
MEAS.DEV.PEAK	R	-150,0…150,0	Gives the peak value for the signal deviation in kHz

6.2.3. Configuration commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CONF.AMB.MAX	R/W	[0..999]	Sets the triggering threshold for the ambient temperature alarm
CONF.HEAT.MAX	R/W	[0..125]	Sets the triggering threshold for the radiator 1 temperature alarm
CONF.DEV.MPX	R/W	00000 à 150.00	Sets the MPX excursion
CONF.DEV.AUDIO	R/W	0…150	Sets the audio excursion
CONF.DEV.PILOT	R/W	0 to 25.5	Sets the pilot excursion
CONF.DEV.RDS	R/W	0 to 25.5	Sets the RDS excursion
CONF.DEV.SCA	R/W	0 to 25.5	Sets the SCA excursion
CONF.DEV.CLIP	R/W	0 to 200	Set the excursion clipping ; +128 = disabled limitation
CONF.DEV.LIMIT	R/W	0 to 200	Set the MPX excursion limitation; +128 = disabled limitation
CONF.DEV.MPXPWR	R/W	-12.7…12.7	Set the MPX power limitation; +128 = disabled limitation
CONF.CROSSFADE	R/W	0 to 25.5	Crossfade between channels (in seconds)
CONF.FREQ	R/W	"ON" or "OFF"	Gives the exciter's working frequency in kHz
CONF.STATE.SCA	R/W	"ON" or "OFF"	Adds or remove SCA in the MPX 0= disabled; >0 channel to use
CONF.STATE.RDS	R/W	"ON" or "OFF"	Adds or remove RDS in the MPX 0= disabled; >0 channel to use
CONF.PHASE.PILOT	R/W	-180..+180	Sets the pilot phase
CONF.PHASE.RDS	R/W	-180..+180	Sets the RDS phase

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6.2.4. Alarm commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
ALARM.AMB	R	"ON" or "OFF"	ON => ambient alarm, OFF => No alarm.
ALARM.BATLOW	R	"ON" or "OFF"	Indicates if the NVRAM battery's level is OK
ALARM. INPUTSWITCH	R	"ON" or "OFF"	Indicates if the current audio input corresponds to the highest priority channel
ALARM.VOLT.AUX	R	"ON" or "OFF"	Indicates if auxiliary voltage is offset by more than 10% of the set value
ALARM.LIST	R		Returns the list of current alarms in ASCII format

6.2.5. Input commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.LINE1.LEFT.RMS	R	-100 … 28	Gives the left audio input average value
INPUT.LINE1.LEFT.PEAK	R	-100 … 28	Gives the left audio input max peak value
INPUT.LINE1.RIGHT.RMS	R	-100 … 28	Gives the right audio input average value
INPUT.LINE1.RIGHT.PEAK	R	-100 … 28	Gives the right audio input max peak value
INPUT.LINE1.PRESENCE	R	"NONE" or "L" or "R" or "L&R"	Indicates audio signals are present on input 1
INPUT.LINE1.TYPE	R	"ANA" or "AES" "OFF"	Indicates the type of audio signals present on input 1
INPUT.LINE1.SW.PRIO	R/W	0..7 ; 0=disabled	Priority of each audio channel (7= highest priority)
INPUT.LINE1.SW.THRESH	R/W	-90…000	Silence triggering level in dBFS on channel 1
INPUT.LINE1.SW.SILENCE	R/W	"L" or "R" or "ANY" or "BOTH"	Sets on which channel (L,R or L+R) silence detection must be conducted for the audio input 1
INPUT.LINE1.SW.BACKDELAY	R/W	XXX=[0…30]	Back delay on the channel with the highest configurable priority.
INPUT.LINE1.SW.DELAY	R/W	XXX=[1…120]	Switching delay when loss of audio 1
INPUT.LINE1.DRIVE	R/W	-6.00 to 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.
INPUT.LINE1.TRIM	R/W	-3.00 to 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
INPUT.LINE1.FLT	R/W	"0" or "15" or "16" or "17"	Configuration of the audio filter
INPUT.LINE1.PREAC	R/W	0;50;75	Sets the value of the pre-emphasis
INPUT.LINE1.LEVEL	R/W	-20.00...18.00	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.LINE2.LEFT.RMS	R	-100 … 28	Gives the left audio input average value
INPUT.LINE2.LEFT.PEAK	R	-100 … 28	Gives the left audio input max peak value
INPUT.LINE2.RIGHT.RMS	R	-100 … 28	Gives the right audio input average value
INPUT.LINE2.RIGHT.PEAK	R	-100 … 28	Gives the right audio input max peak value
INPUT.LINE2.PRESENCE	R	"NONE" or "L" or "R" or "L&R"	Indicates audio signals are present on input 2
INPUT.LINE2.TYPE	R	"ANA" or "AES" "OFF"	Indicates the type of audio signals present on input 2
INPUT.LINE2.SW.PRIO	R/W	0..7 ; 0=disabled	Priority of each audio channel (7= highest priority)
INPUT.LINE2.SW.THRESH	R/W	-90…000	Silence triggering level in dBFS on channel 2
INPUT.LINE2.SW.SILENCE	R/W	"L" or "R" or "ANY" or "BOTH"	Sets on which channel (L,R or L+R) silence detection must be conducted for the audio input 2
INPUT.LINE2.SW.BACKDELAY	R/W	XXX=[0…30]	Back delay on the channel with the highest configurable priority.
INPUT.LINE2.SW.DELAY	R/W	XXX=[1…120]	Switching delay when loss of audio 2
INPUT.LINE2.DRIVE	R/W	-6.00 to 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.
INPUT.LINE2.TRIM	R/W	-3.00 to 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)

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NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.LINE2.FLT	R/W	0;1;2 0=15;1=16;2=17	Configuration of the audio filter
INPUT.LINE2.PREAC	R/W	0;50;75	Sets the value of the pre-emphasis
INPUT.LINE2.LEVEL	R/W	-20.00...18.00	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.PLAYER.LEFT.RMS	R	-100 … 28	Gives the left audio input average value
INPUT.PLAYER.LEFT.PEAK	R	-100 … 28	Gives the left audio input max peak value
INPUT.PLAYER.RIGHT.RMS	R	-100 … 28	Gives the right audio input average value
INPUT.PLAYER.RIGHT.PEAK	R	-100 … 28	Gives the right audio input max peak value
INPUT.PLAYER.PRESENCE	R	OFF or "L" or "R" or "L&R"	Indicates audio signals are present on the player
INPUT.PLAYER.SW.PRIO	R/W	0..4 ; 0=disabled	Priority of each audio channel (7= highest priority)
INPUT.PLAYER.SW.THRESH	R/W	-90…000	Silence triggering level in dBFS on channel 1
INPUT.PLAYER.SW.SILENCE	R/W	"L" or "R" or "ANY" or "BOTH"	Sets on which channel (L,R or L+R) silence detection must be conducted for the audio input 1
INPUT.PLAYER.SW.BACKDELAY	R/W	XXX=[0…30]	Back delay on the channel with the highest configurable priority.
INPUT.PLAYER.SW.DELAY	R/W	XXX=[1…120]	Switching delay when loss of audio 1
INPUT.PLAYER.DRIVE	R/W	-6.00 to 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.
INPUT.PLAYER.TRIM	R/W	-3.00 to 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
INPUT.PLAYER.FLT	R/W	0;1;2 0=15;1=16;2=17	Configuration of the audio filter
INPUT.PLAYER.PREAC	R/W	0;50;75	Sets the value of the pre-emphasis
INPUT.PLAYER.LEVEL	R/W	-20...0	Internal numerical gain
INPUT.PLAYER.SAMPLING	R/W	"44" or "48" or "96"	Sampling frequency of the internal player audio signal
INPUT.MPX.SW.THRESH	R/W	-90…000	Silence triggering level in dBFS on MPX 1
INPUT.MPX.HWHPFLT	R/W	ON or OFF	Enables or disables the high pass hardware filter of the integrated circuit PCM1804
INPUT.MPX.SW.BACKDELAY	R/W	XXX=[0…30]	Back delay on the channel with the highest configurable priority.
INPUT.MPX.SW.DELAY	R/W	XXX=[1…120]	Switching delay when loss on the MPX input
INPUT.MPX1.PRESENCE	R	MO" or "MO+R" or "MO+R+S" or "ST" or "ST+R" or "ST+R+S"	Gives the composition of MPX1 on channel 3. R = RDS ; MO = Mono ; ST = Stereo ; S = SCA
INPUT.MPX1.RMS	R	-150…150	Gives the deviation average value of the transmitted signal in kHz
INPUT.MPX1.PEAK	R	-150…150	Gives the deviation max peak value of the transmitted signal in kHz
INPUT.MPX1.SW.PRIO	R/W	0..7 ; 0=disabled	Priority of each audio channel (4= highest priority)
INPUT.MPX1.DRIVE	R/W	-6.00 to 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.
INPUT.MPX1.TYPE	R/W	"MO" or "ST" or "ST+R+S" or "ST+R" or "RDS" or "RDS+SCA" or "SCA"	Sets the type of signal on the MPX1 input and applies the corresponding filter
INPUT.MPX1.LEVEL	R/W	-18.00...+18.00	Internal numerical gain
INPUT.MPX2.PRESENCE	R	MO" or "MO+R" or "MO+R+S" or "ST" or "ST+R" or "ST+R+S"	Gives the composition of MPX2 on channel 3. R = RDS ; MO = Mono ; ST = Stereo ; S = SCA
INPUT.MPX2.RMS	R	-150...150	Gives the deviation average value of the transmitted signal in kHz
INPUT.MPX2.PEAK	R	-150…150	Gives the deviation max peak value of the transmitted signal in kHz
INPUT.MPX2.TYPE	R/W	"MO" or "ST" or "ST+R+S" or "ST+R" or "RDS" or "RDS+SCA" or "SCA"	Sets the type of signal on the MPX1 input and applies the corresponding filter
INPUT.MPX2.LEVEL	R/W	-18.00...+18.00	Internal numerical gain
INPUT.MPX2.DRIVE	R/W	-6.00...6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.

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NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.MPX2.SW.PRIO	R/W	0..7 ; 0=disabled	Priority of each audio channel (4= highest priority)
INPUT.AUDIOGEN.STATE	R/W	"OFF" or "L" or "R" or "L+R" or "L-R"	Type of generated MPX signal
INPUT.AUDIOGEN.LEVEL	R/W	-100.00 ~ 12.00	Audio level
INPUT.AUDIOGEN.FREQ	R/W	0 ~ 100000.00	delta phase = freq audio / 200000
INPUT.AUDIOGEN.PREAC	R/W	"0" or "50" or "75"	Sets the value of the pre-emphasis

6.2.6. Encoder commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CODER.MOST	R/W	"STEREO" or "MONO" or "MONO_L" or "MONO_R"	Configuration of the audio on MPX STEREO; MONO;MONO_L
CODER.CURRENT.AUDIO	R	"AUTO" or "LINE1" or "LINE2" or "TUNER" or "MPX1" or "MPX2" or "TUNER1" or "TUNER2" or "PLAYER" or "GENE"	Indicates the channel used by the exciter.
CODER.CURRENT.RDS	R	"NONE" or "MPX1" or "MPX2" or "TUNER1" or "TUNER2" or "INTERNAL"	Indicates the channel used by the exciter.
CODER.RDS.OPERATION	R/W	"AUTO" or "MANU"	Automatically or manually adds RDS if loss of RDS in the MPX.
CODER.SELECT.AUDIO	R/W	"AUTO" or "LINE1" or "LINE2" or "TUNER" or "MPX1" or "MPX2" or "TUNER1" or "TUNER2" or "PLAYER" or "GENE"	Imposes a specific input.
CODER.SELECT.RDS	R/W	"MPX1" or "MPX2" or "TUNER1" or "TUNER2" or "INTERNAL"	Channel to use
CODER.SELECT.SCA	R/W	"MPX1" or "MPX2" or "TUNER1" or "TUNER2"	Channel to use
CODER.19KOUT.LEVEL	R/W	0…8; 0=OFF	Enables/disables and sets the rear panel 19 kHz level output

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6.2.7. RDS commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
RDS.MAINDSN.PI	R/W	XXXX X=[0..9;A…F]	Enables RDS to identify the station when searching the frequency using AF or EON-AF code
RDS.MAINDSN.PS	R/W	XXXX X=[0..9;A…Z]	Station name; with 8 characters
RDS.MAINDSN.PTY	R/W	0~31	Program type as set by the RDS standard
RDS.MAINDSN.MS	R/W	"0" or "1"	Numerical flag that automatically modifies the sound level of an RDS receiver depending on the broadcast program (1 = music, 0 = speech)
RDS.MAINDSN.DI	R/W	0~15	Numerical function that drives an RDS receiver's audio stage to adjust audio decoding depending on the type of audio channel (mono, stereo, ...)
RDS.MAINDSN.AF	R/W	XX,…,XX XX=[87.5 ~108.00]	List of alternative frequencies (26 max)
RDS.MAINDSN.RT	R/W	X..X ; X=[0..9;A..Z]	radiotext
RDS.MAINDSN.TIME	R/W		
RDS.MAINDSN.GS	R/W	XX;;XX XX=service	Group sequence: 0A => 0, 2A=>4, 10A=>20 (32 max)
RDS.MAINDSN.TATP	R/W	"OFF" or "TA" or "TP" or "TATP"	Enables/disables TA and TP services
RDS.ALTDSN.PI	R/W	XXXX X=[0..9;A…F]	Enables RDS to identify the station when searching the frequency using AF or EON-AF code
RDS.ALTDSN.PS	R/W	XXXX X=[0..9;A…Z]	Station name; with 8 characters
RDS.ALTDSN.PTY	R/W	0~31	Program type as set by the RDS standard
RDS.ALTDSN.MS	R/W	"0" or "1"	Numerical flag that automatically modifies the sound level of an RDS receiver depending on the broadcast program (1 = music, 0 = speech)
RDS.ALTDSN.DI	R/W	0~15	Numerical function that drives an RDS receiver's audio stage to adjust audio decoding depending on the type of audio channel (mono, stereo, ...)
RDS.ALTDSN.AF	R/W	XX,…,XX XX=[87.5 ~108.00]	List of alternative frequencies (26 max)
RDS.ALTDSN.RT	R/W	X..X ; X=[0..9;A..Z]	radiotext
RDS.ALTDSN.TIME	R/W		
RDS.ALTDSN.GS	R/W	XX;;XX XX=service	Group sequence: 0A => 0, 2A=>4, 10A=>20 (32 max)
RDS.ALTDSN.TATP	R/W	"OFF" or "TA" or "TP" or "TATP"	Enables/disables TA and TP services
RDS.DSN	R/W	"MAIN" or "ALT"	transmit the DSN 1 or 2 to the exciter
RDS.MAINDSN.ID	R/W	X; X=[1…8]	Indicates which DSN sent by UECP is copied to the MAIN memory
RDS.ALTDSN.ID	R/W	X; X=[1…8]	Indicates which DSN sent by UECP is copied to the ALT memory

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6.2.8. Transmitter commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
TX.NAME	R/W	XXXX X=[A…Z]	Transmitter name
TX.FREQ	R/W	XXXXXX	Working frequency of the modulator in kHz "232553" => 232.553 MHz
TX.3DB	R/W	[0..9999]	Sets the triggering threshold for the 3 dB alarm. Example "250" => 250 W
TX.ALARM.3DB	R	"ON" or "OFF"	ON => 3 dB alarm, OFF => No alarm.
TX.FAULT	R	"FAULT" or "OK"	Fault state of transmitter
TX.ALARM.VSWR	R	"ON" or "OFF"	ON => VSWR alarm, OFF => No alarm
TX.LOCALMODE	R	"LOCAL" or "REMOTE"	Single transmitter, indicates the local or remote mode
TX.VSWR.MAX	R/W	XX.X X=[0..9]	Sets the triggering threshold for the VSWR alarm. Must be of type "XXX"."020" => VSWR = 2. Do not use "2" or "1.4".
TX.OPMODE	R/W	"ON" or "OFF"	Single transmitter control
TX.PCAP	R	[0..999]	Amplifier nominal power: example "300"=>300W
TX.PFWD	R	[0..9999]	Measure of direct power. examples: "20" or "300" => 300W
TX.PREF	R	xxx.x x=[0..9]	Measure of reflected power: "20" => 2W
TX.PWR	R/W	[0..9999]	Sets the output power. From "0" .. "9999"
TX.RFPRESENT	R	"PRES" or "NOT PRES"	Indicates if the single transmitter output power is present
TX.TYPE	R	xxx x=[A..Z;0..9]	System type: example "1000-NT" For a 1000 W transmitter with Nephtys central unit
TX.VSWR	R	XX.X X=[0..9]	VSWR measure "01.0" or "20.0"
TX.WARNING	R	"ON" or "OFF"	Single transmitter. Warning state of single transmitter
TX.SBY	R/W	"ON" or "OFF"	Enables/disables the standby mode
TX.3DB.AUTO	R/W	"ON" or "OFF"	If ON set the 3 dB level to TX.PWR/2. If TX.3DB is modified, switches automatically to OFF
TX.LINK	R	"OPEN" or "CLOSE"	State of the CAN bus link
TX.INTERLOCK	R	"CLOSE" or "OPEN"	State of the safety loop

6.2.9. Status commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
STAT.LINK	R	"OPEN" or "CLOSE"	State of the CAN bus link
STAT.INTERLOCK.ANTENNA	R	"CLOSE" or "OPEN"	State of the antenna safety loop
STAT.INTERLOCK.LOAD	R	"CLOSE" or "OPEN"	State of the load safety loop
STAT.SWRF	R	"ON" or "OFF"	State of the RF switch
STAT.SECTEMP	R	"ON" or "OFF"	State of the temperature safety
STAT.DCOK1	R	"ON" or "OFF"	Indicates if the PSU 1 of the amplifier is "ON" or "OFF"
STAT.DCOK2	R	"ON" or "OFF"	Indicates if the PSU 2 of the amplifier is "ON" or "OFF"
STAT.DCOK3	R	"ON" or "OFF"	Indicates if the PSU 3 of the amplifier is "ON" or "OFF"
STAT.DCOK4	R	"ON" or "OFF"	Indicates if the PSU 4 of the amplifier is "ON" or "OFF"
STAT.SECPREF	R	"ON" or "OFF"	Indicates if the reflective protection is enabled
STAT.SECPIN	R	"ON" or "OFF"	Indicates if the input power is greater than the hardware threshold
STAT.ALARMS	R	XXXXXXXX x=[0,1…F]	Returnes a 32 bit value indicating current alarms
STAT.CURRENT.IN	R	"1+OPT" or "1+2" or "2+OPT"	Indicates the channels used for channels 1 and 2

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6.2.10. Communication board commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CAN	R/W	ID,CMD,DATA ; ID=[0…9]; CMD=[0…FF] DATA=[0..9 ; A…Z]"	Gateway between the serial port and the CAN bus. ID=recipient's address; TABLE=table containing the command; CMD=command number; DATA=parameter value. The list of tables/commands is available on request.
CAN.PING	R		Returns data sent within the limits of the CAN protocol 8 bits. It indicates whether the unit is there and in operation.
CAN.SCAN	R/W		Returns the list of units present of the CAN bus.

Commands related to options are only available when the option is present.

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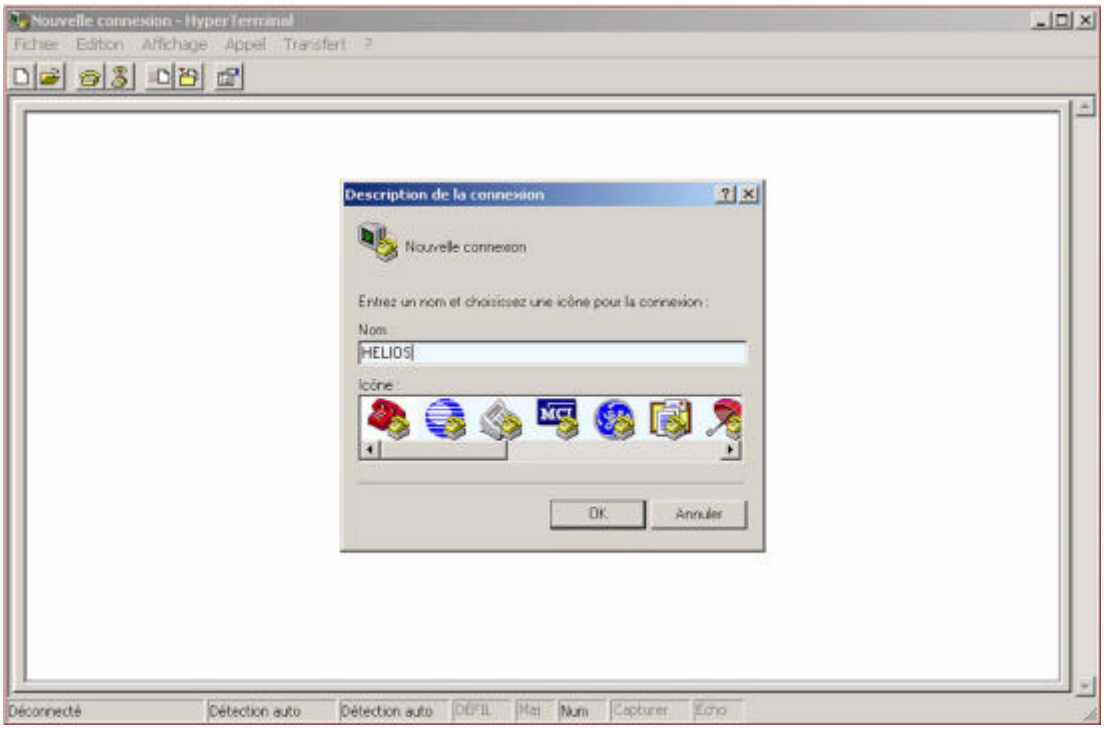
6.3. HyperTerminal connection

With Windows 95/98/2000/XP/Vista/7, launch the HyperTerminal:

Start > Programs > Accessories > Communication > HyperTerminal.

The following window appears:

Connection description



Enter the connection name and click OK.

It is recommended to enter the device name you want to contact.

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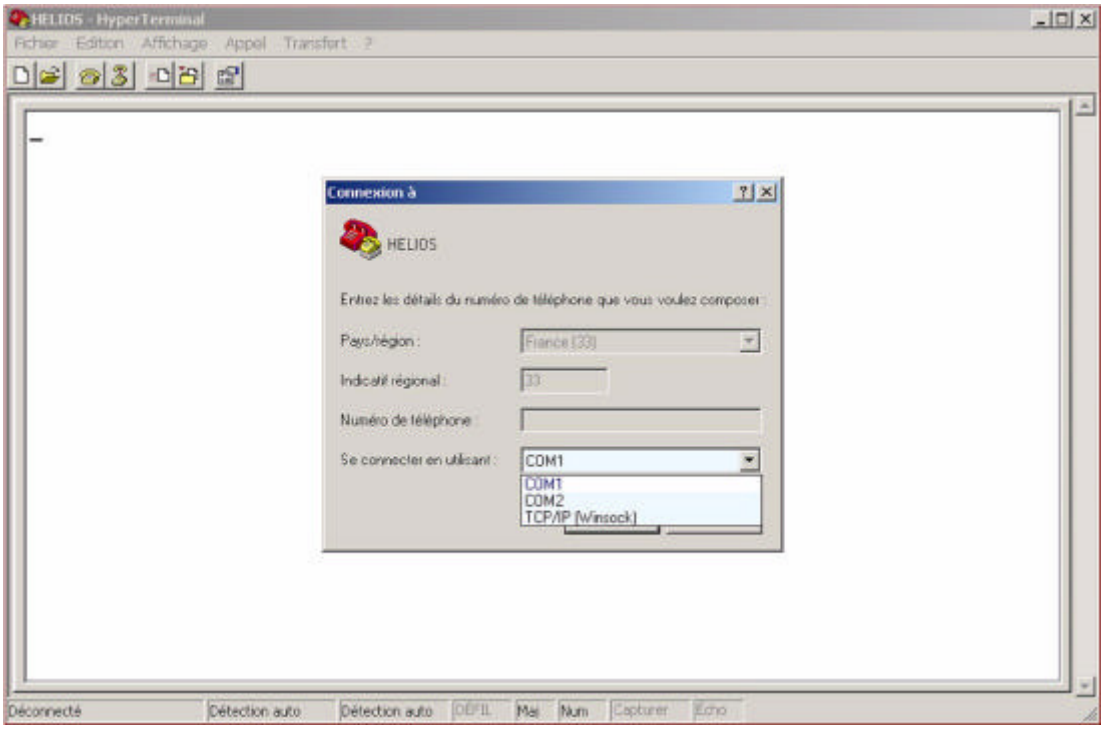
The next window appears:

Connection



Select the serial port with which you want to connect to the equipment, then click OK.

Enter the port parameters as indicated, and click OK.

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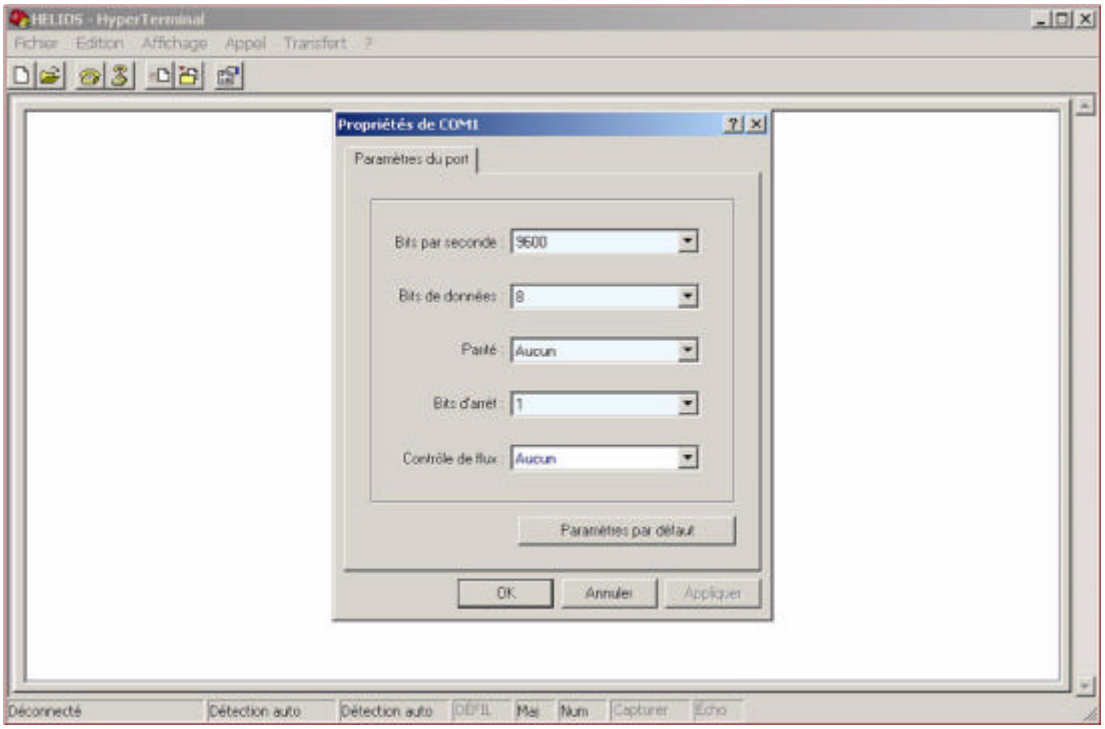
Port settings



You connection has been established, you can directly communicate with the device connected to the serial port of your computer.

You can launch the commands described in this chapter. Typing the INFO command, the device must display the following information (connected to a Goliath in this example).

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7. REMOTE CONTROL AND MONITORING WITH THE GPIO BOARD

7.1. Introduction

This function is available when the optional GPIO board is installed on the transmitter.

It provides an interface between ECRESO transmitters and external systems. The modules are remotely controlled via “RC” inputs using opto isolators. Working state and alarms are sent to “RM” outputs via relays.

7.2. Description of control and monitoring functions

Control commands work when an impulsion longer than 100 ms is sent to the corresponding input.

There are 8 control functions:

- Power on: turns on the transmitter
- Power off: turns off the transmitter
- RF on: enables the RF
- RF off: disables the RF
- Config 1 to 4 : retrieves the configuration in memory (from 1 to 4) (future version)

Outputs are relays that include a normally closed or normally open contact. When an event occurs in the unit, the corresponding relay is activated.

Six monitoring functions are associated with relays:

- Local: indicates if the unit is in local mode
- Default: indicates a transmitter default
- Warning: indicates an alarm linked to the internal working of the transmitter (temperature, voltage…)
- RF: indicates if the RF is enabled and/or if there is a 3 dB error
- On: indicates if the transmitter is not in standby mode
- Off: indicates if the transmitter is in standby mode
- VSWR: indicates if there is a VSWR error

7.3. Remote control function pinout

Function	Remote Control	Input name	Common
POWER ON	RC1	OPT1A(20)	RC_COMMUN(24)
POWER OFF	RC2	OPT2A(8)	RC_COMMUN(24)
RF ON	RC3	CONF1(21)	RC_COMMUN(24)
RF OFF	RC4	CONF2(9)	RC_COMMUN(24)
CONFIG 1	RC5	CONF3(22)	RC_COMMUN(24)
CONFIG 2	RC6	CONF4(10)	RC_COMMUN(24)
CONFIG 3	RC7	CONF5(23)	RC_COMMUN(24)
CONFIG 4	RC8	CONF6(11)	RC_COMMUN(24)

Numbers in parenthesis indicated the pin number on the DB25 connector.

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7.4. Remote monitoring function pinout

Event	Remote Monitoring	Output name	Common
LOCAL	RM1	REL1_RT(1)	REL1_C(14)
FAULT	RM2	REL2_RT(2)	REL2_C(15)
WARNING	RM3	REL3_RT(3)	REL3_C(16)
RF (ON/OFF or 3DB or both)	RM4	REL4_RT(4)	REL4_C(17)
ON	RM5	REL5_T(5)	REL5_C(6)
OFF	RM6	REL5_R(5)	REL5_C(6)
VSWR	RM7	REL6_RT(6)	REL6_C(7)

Numbers in parenthesis indicated the pin number on the DB25 connector.

A closed link indicates valid information when configuration is as in the following table.

Default jumper position:

Relay	Positions	Contacts
REL_1RT	JUMP2[1 ;2]	NO
REL2_RT	JUMP3[1 ;2]	NO
REL3_RT	JUMP5[1 ;2]	NO
REL4_RT	JUMP1[1 ;2]	NO
REL6_RT	JUMP4[1 ;2]	NO

Jumpers from 1 to 5 (JUMP1 to JUMP5): select the NO or NC contact of the relays.

When switching to local mode (relay 1), all other relays are disabled.

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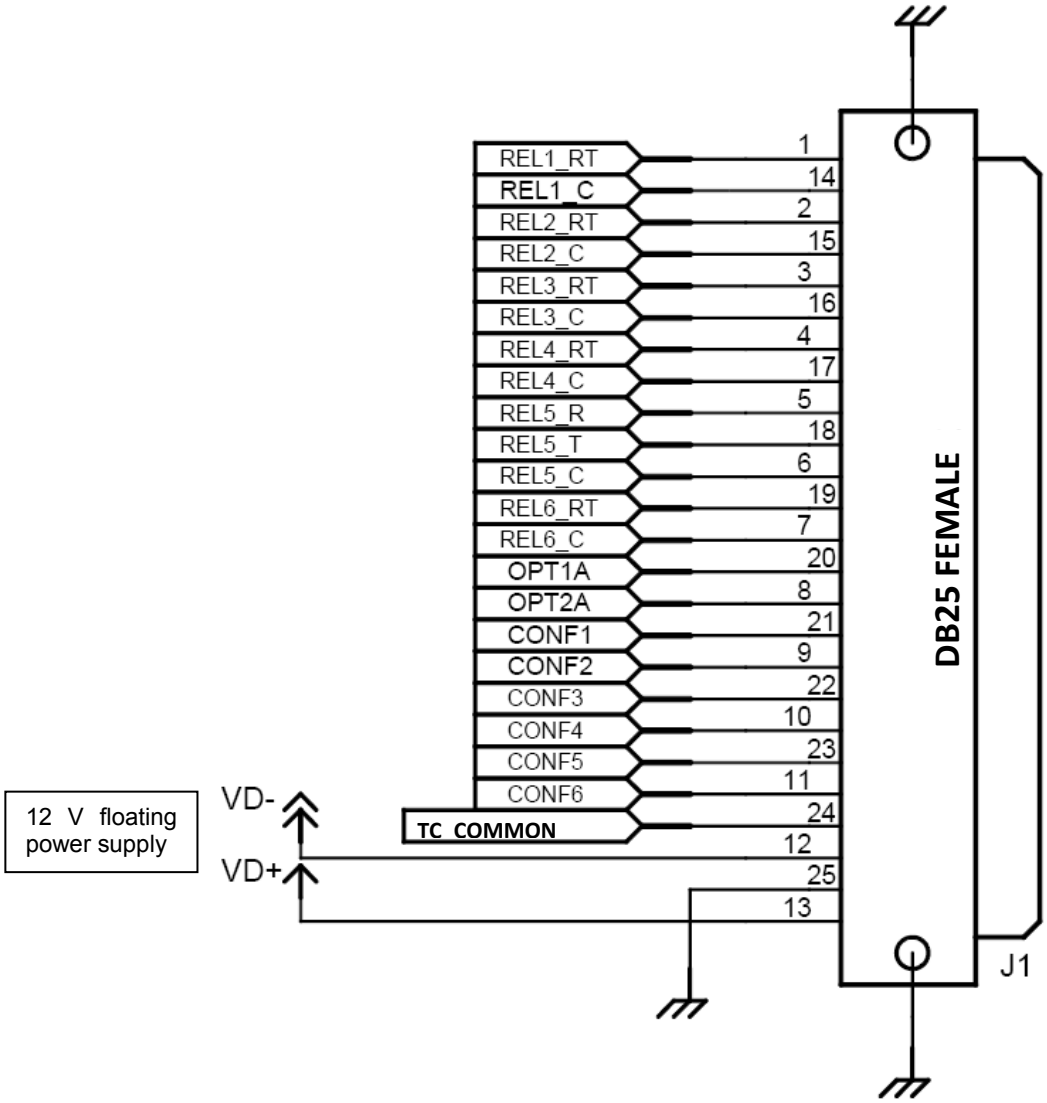
7.5. Physical representation of the GPIOs



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7.6. Management using serial commands

A set of commands makes it possible to override the control board to modify specific RC outputs and read specific RM inputs.

To do so, set the RC you want to control (SYS.GPIO.IN.MASK) and the RM you want information from (SYS.GPIO.OUT.MASK).

When these commands are used, the control board cannot monitor nor control them.

NAME	Access (R/W)	Serial port possible value	Comments
SYS.GPIO.IN.ACT	R	XX X=[A..F;0..9]	Indicates the corresponding RC when managed manually (see SYS.GPIO.IN.MASK)
SYS.GPIO.OUT.ACT	R/W	XX X=[A..F;0..9]	Enables the corresponding RM when managed manually (see SYS.GPIO.OUT.MASK)
SYS.GPIO.IN.MASK	R/W	XX X=[A..F;0..9]	Sets the RC control either by the control board or manually. Hexadecimal code: each bit corresponds to an input. Ex: A1 (10100001) indicates the RC 1, 6 and 8 are managed manually
SYS.GPIO.OUT.MASK	R/W	XX X=[A..F;0..9]	Sets the RM control either by the control board or manually. Hexadecimal code: each bit corresponds to an input: Ex: 21 (00100001) indicates RM 1 and 6 are managed manually.

Serial commands used to configure RC/RM

Remote control binary values:

Remote Control	Binary value
RC1	xxxxxxx1
RC2	xxxxxx1x
RC3	xxxxx1xx
RC4	xxxx1xxx
RC5	xxx1xxxx
RC6	xx1xxxxx
RC7	x1xxxxxx
RC8	1xxxxxxx

Remote monitoring binary values:

Remote Monitoring	Binary value
RM1	xxxxxxx1
RM2	xxxxxx1x
RM3	xxxxx1xx
RM4	xxxx1xxx
RM5	xxx1xxxx
RM6	xx1xxxxx
RM7	x1xxxxxx

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However, the format of values returned by serial commands is hexadecimal.

You must then convert each 4 digit set as per the following table:

Hexadecimal	Binary
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

Examples:

If the command

```
SYS.GPIO.IN.ACT
```

returns

```
8A
```

You must convert the hexadecimal value in binary, ie 8A=10001010, which indicates that RC 2, 4 and 8 are activated.

To control RM 3 and 5, convert the binary value 00010100: you get 14 as per the above table. You must then send the command:

```
SYS.GPIO.OUT.MASK=14
```


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8. THE EMBEDDED WEBSITE

8.1. Introduction

This function is available with the IP/IO version when the optional TCP/IP board is installed on the transmitter.

8.2. Connecting to the embedded web site

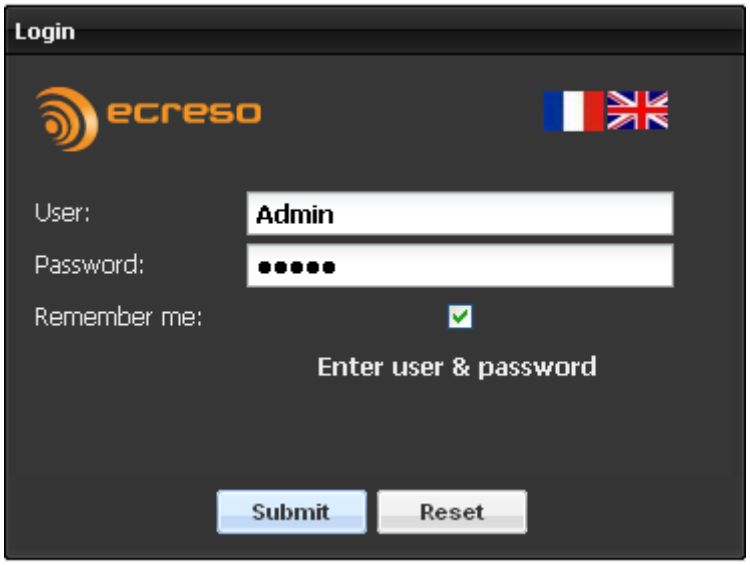
For remote access, connect to the transmitter's embedded web site. Simply open a web browser (Google Chrome, Mozilla Firefox …) and enter the transmitter's IP address in the address bar (default: **192.168.12.103**).

Though the web application is compatible with most browsers, performances vary greatly from on browser to another. For this reason, we recommend you use Google Chrome or install the Chrome Frame plug-in for Microsoft Internet Explorer

Open a web browser (Google Chrome, Mozilla Firefox, Internet Explorer …) and enter the Mini Control

Select the language if necessary.

Enter the user name and password:



Two user levels are available:

- Administrator (Admin / admin by default). The administrator has full rights
- Guest (Guest / guest by default). The guest has read-only access to all pages except the user management page.

Check the box to save connection information. This process is managed by the web browser cookies; login and passwords are saved for 15 days.

The tool bar on top of the page enables access to all pages of the site: the user can view the status, access receiver configuration and system configuration.

Data can be both viewed and modified.

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The indicator on the right enables all connected users to know about current notifications:

- No current notification
- A notification has been sent
- A notification has been processed

8.3. Viewing the Status

This page displays the main parameters of the transmitter (read-only).

LEDs give the status of the alarms:

- No alarm
- Alarm
- Unknown status, or element not monitored

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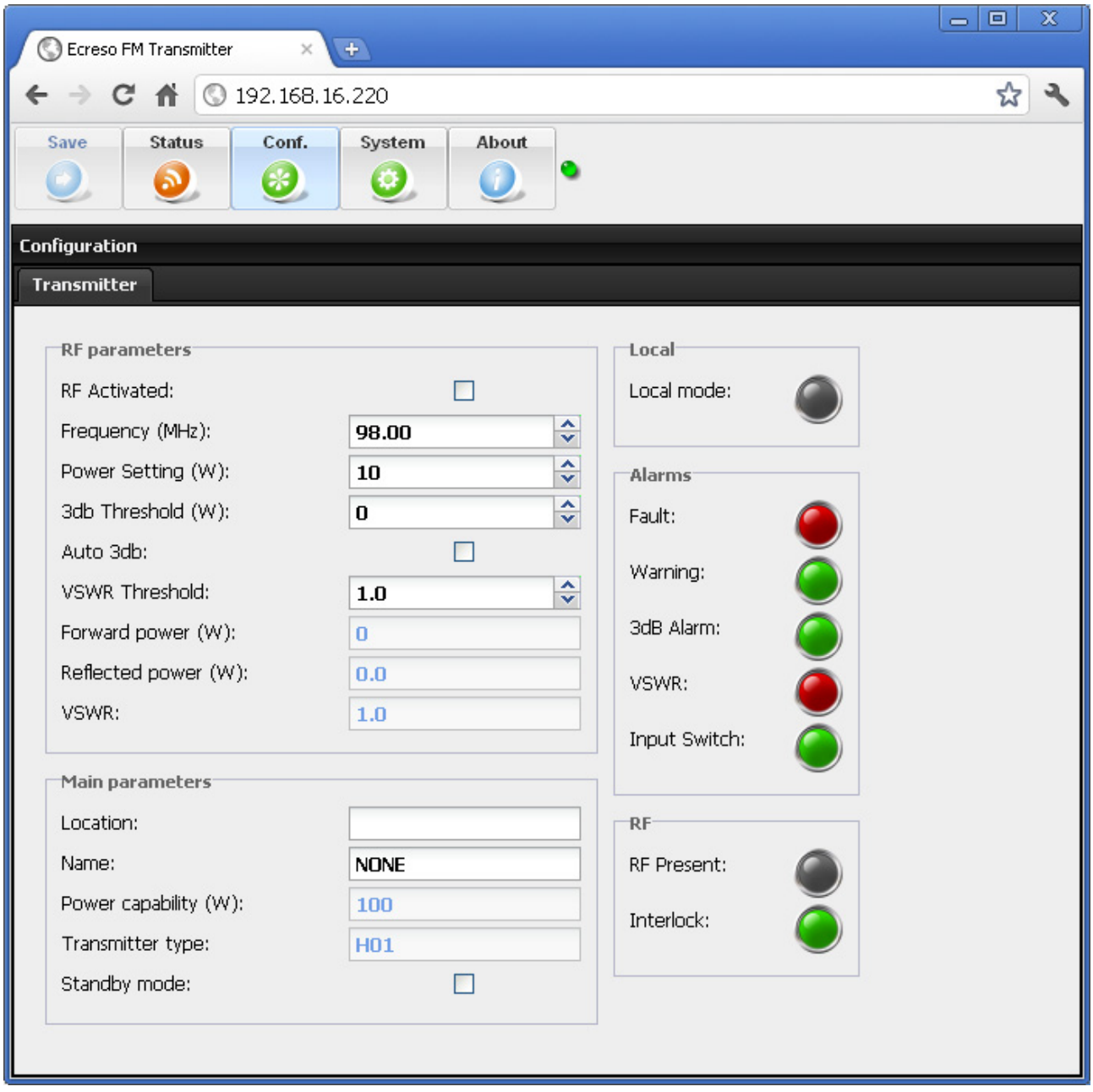
8.4. Configuration

This page displays the main parameters of the transmitter so they can be updated.



When values have been changed, click the button

to save the new settings.

If the transmitter is in local mode (green LED),

Check the Local LED before making changes or you may not be able to save:

- Local mode, modifications cannot be saved.
- Standard mode, modifications can be saved.

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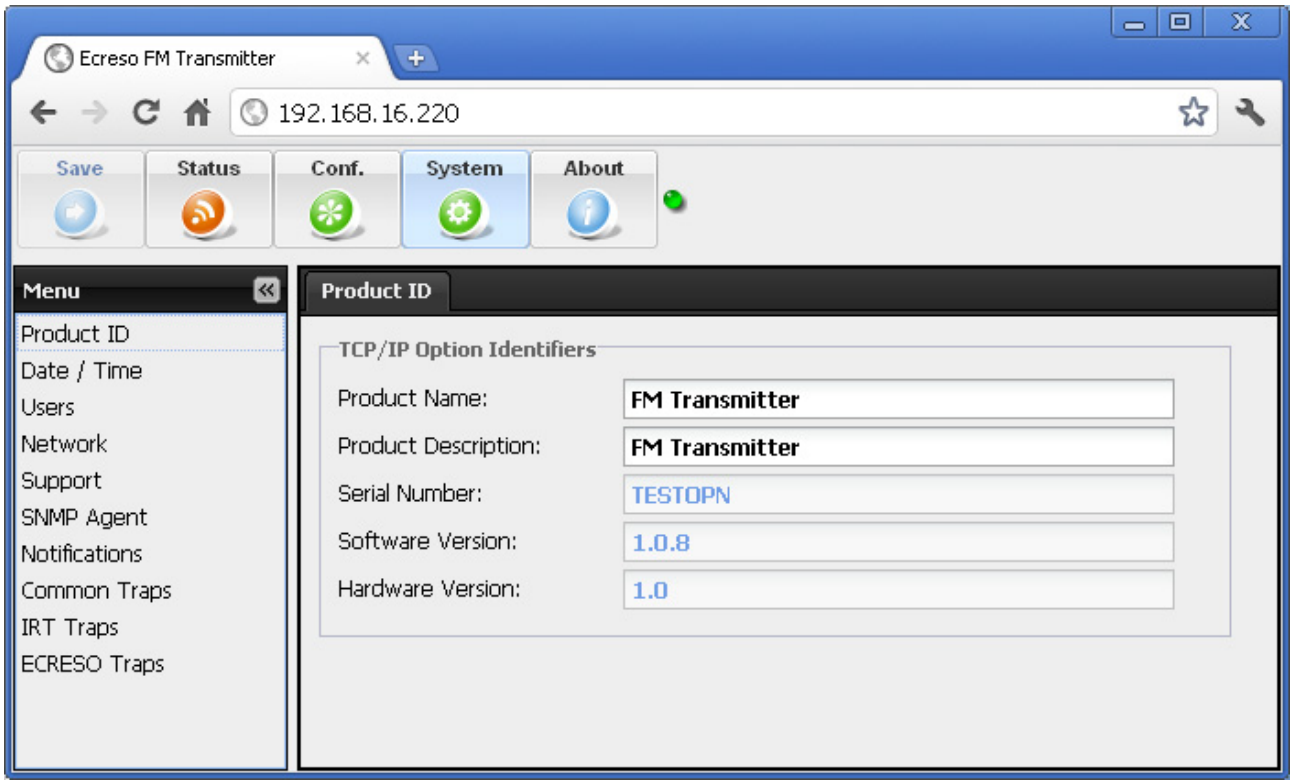
8.5. System

Click the Save button *to lock in your changes; this is true for every page of the system configuration.*

8.5.1. Product ID



General information regarding the product: name, serial number, versions…

Use the product name and product description to adequately and uniquely describe your unit. They are useful in a network environment to identify it.

Specifically, these values are sent with SNMP traps.

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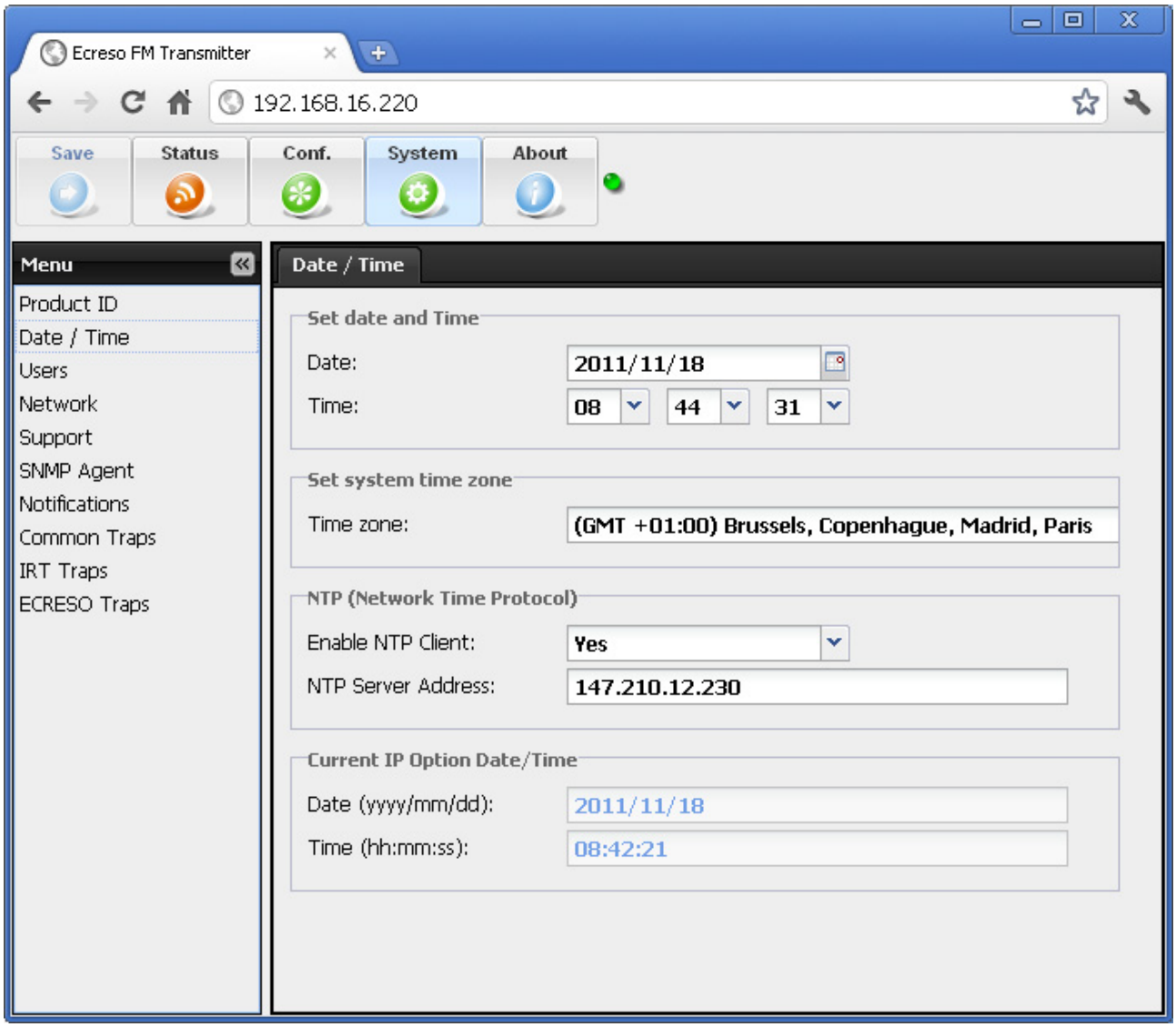
8.5.2. Date / Time



- **Set system date:** the user may update both date (year/month/day) and time (hour/minute/second).

- **Set system time zone:**

The user selects the geographical zone from the list. Important to have this set correctly when using an NTP server.

ⓘ *Set the time zone first! Changes in the time zone affect the time that is displayed in the system time window, so setting the zone first will eliminate the need to set the system time twice!*

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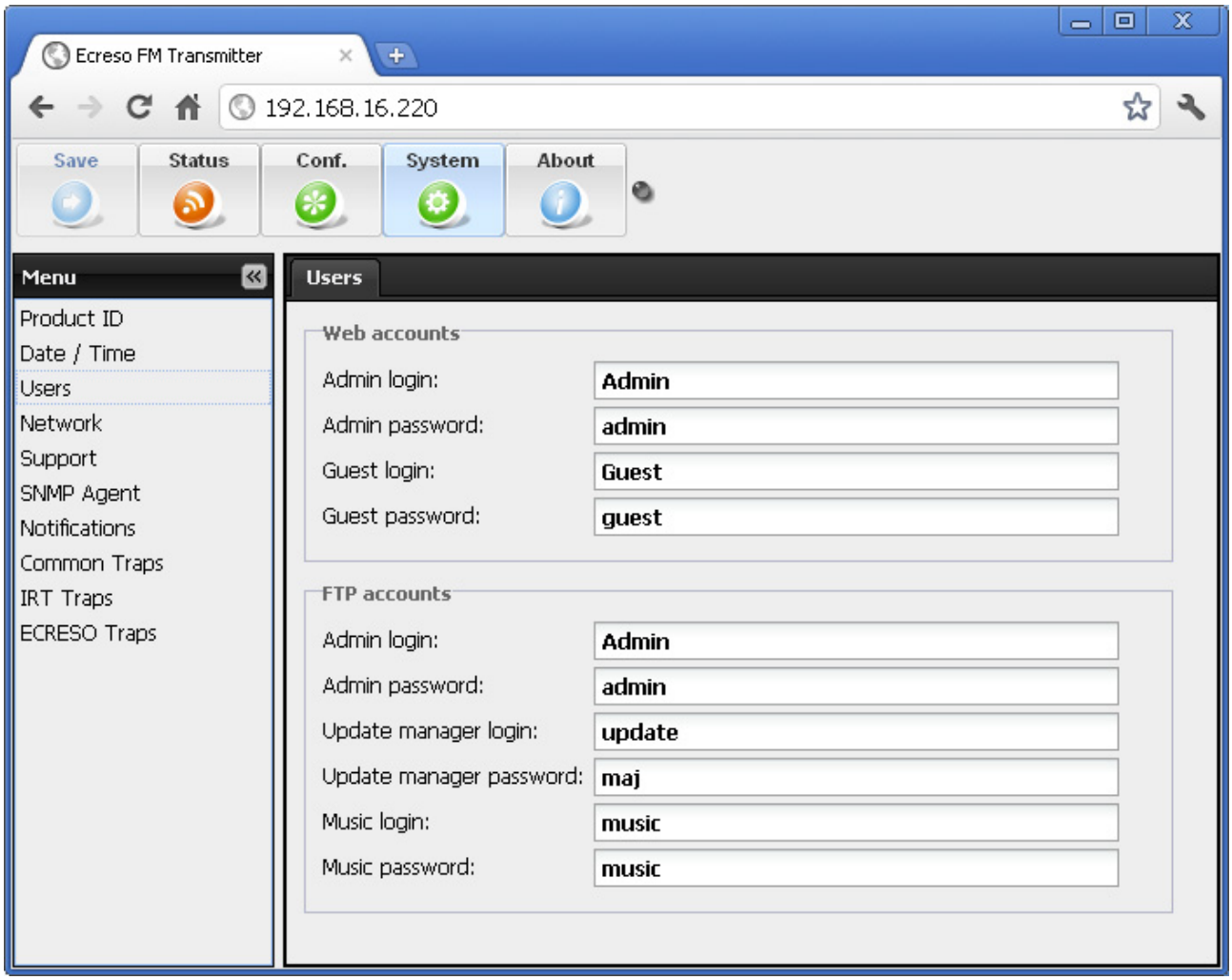
8.5.3. Users



This is where web site connection settings can be modified. This page is only visible to administrators.

Two web and software accounts are available:

- Administrator (Admin / admin by default). The administrator has full rights
- Guest (Guest / guest by default). The guest has read-only access to all pages except the user management page. The guest can download logs.

Three FTP accounts are available:

- Administrator (Admin / admin by default). The administrator has full rights
- Update manager (update / maj by default). This account is only used for software updates.
- Music (music / music by default). This account is used to manage audio backup files.

ⓘ *You may change login names but make sure each is unique!*

ⓘ *Only use alphanumerical characters for user names and passwords.*

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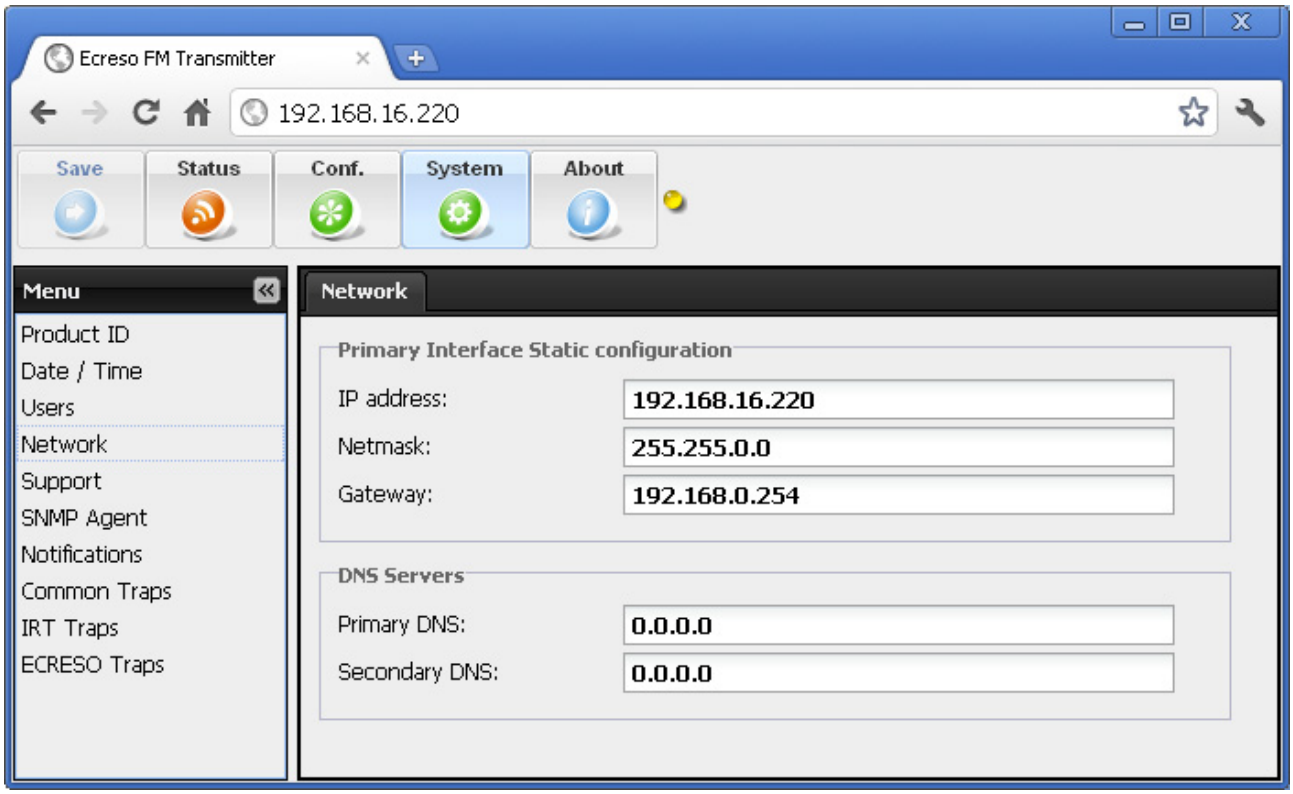
8.5.4. Network



IP Configuration:

- **Static Ethernet configuration**

  Set the parameters for the network interface.

- **DNS Servers:** DNS configuration. Mandatory if before using DNS addresses on other configuration pages.

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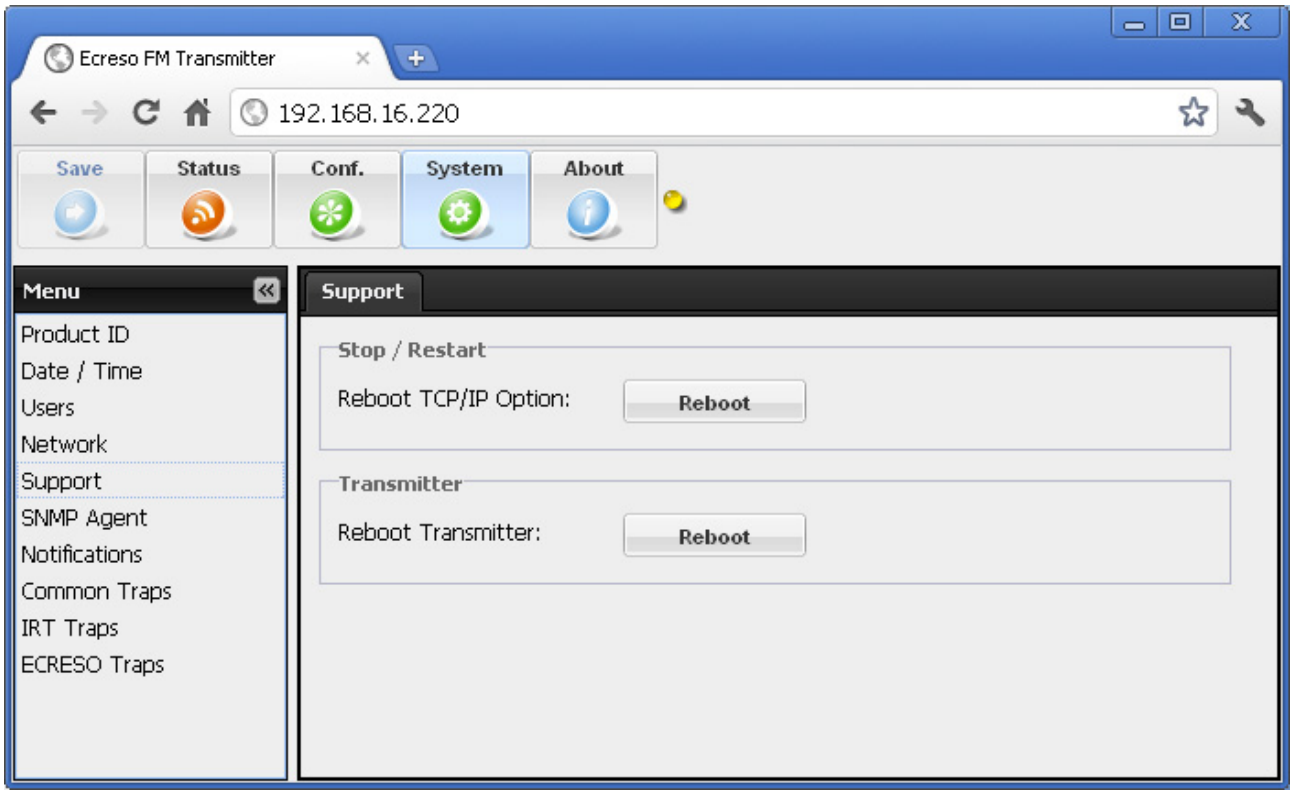
8.5.5. Support



With the ‘Reboot TCP/IP option’ button, restart the TCP/IP board.

With the ‘Reboot Transmitter’ button, restart the transmitter’s front panel.

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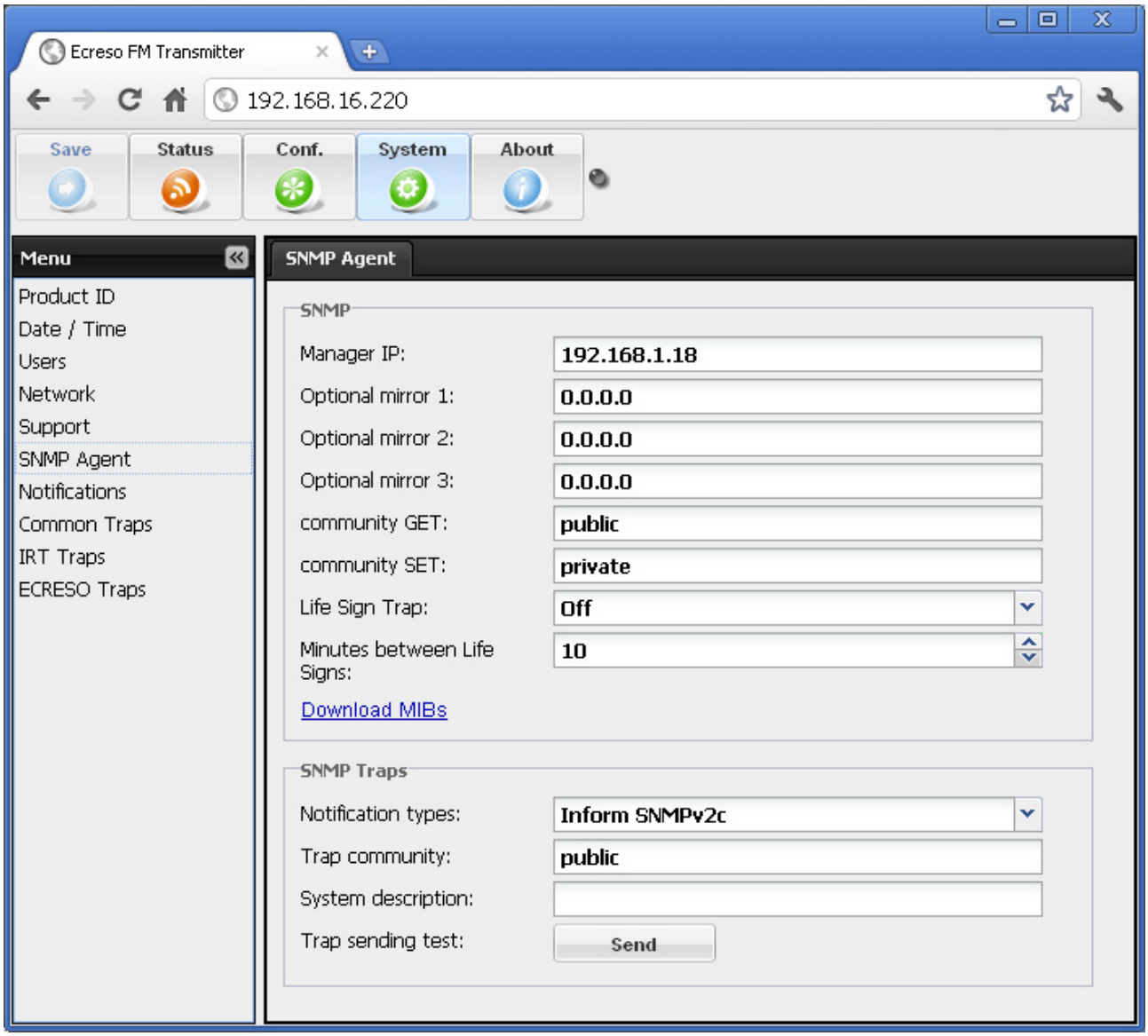
8.5.6. SNMP Agent



- **SNMP configuration**

  The equipment enables multiple addresses to be configured for SNMP notifications. However, only the Main Manager has the authority to acknowledge notifications. With “INFORMS” messages, automatic answers from secondary managers are ignored by the unit.

- **MIB:** to download the MIB right click on the link and select “Save link as”
- **SNMP Traps configuration**

- SNMP Notification Type / Trap Community / System Description: trap settings
- Life Sign Trap / Minutes between Life Signs: sends life signs every X minutes. This trap makes it possible to check that the unit is connected to the network.

- **Trap sending test:** enables the user to carry out a test according to the trap settings.

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8.5.6.1 Supported SNMP versions

The unit implements an SNMP agent conforming to SNMPv1 and SNMPv2c versions. GET and SET commands are supported, as well as GETBULK in SNMPv2c. Notifications can be transmitted in TRAP V1 or V2c form or with an INFORM V2c type.

8.5.6.2 Notification mode

To make sure traps are received by the main recipient, the unit offers 2 methods. With both methods, traps are sent until they are acknowledged.

- **Automatic acknowledgement** for sending with INFORM. These notifications are only available with the version 2c of the protocol. This protocol checks that the manager sends the notification to the transmitter. This process is simple and reliable, no specific configuration is required for the manager.
- **Manual acknowledgement** for Traps V1 and Traps V2c. A specific OID ("alarmPendingAlarmsalarmAck") is extracted and its variables are sent with the trap. The manager must then execute a SET command. This method is more complex but is the only one that can work with the version 1 of the protocol.

The acknowledgment mode (Trap V1, Trap V2c or Inform) is identical for all alarms. See the next section **"Notifications"** for additional settings.

With "SNMPv2c traps" notifications, it not possible to acknowledge traps.
In the same way, traps which do not require acknowledgment cannot be sent with the "Inform SNMPv2c" format, even when this format is selected. This is the case with the 'test' trap as well as with equipment information traps such as the 'Equipment On' trap.

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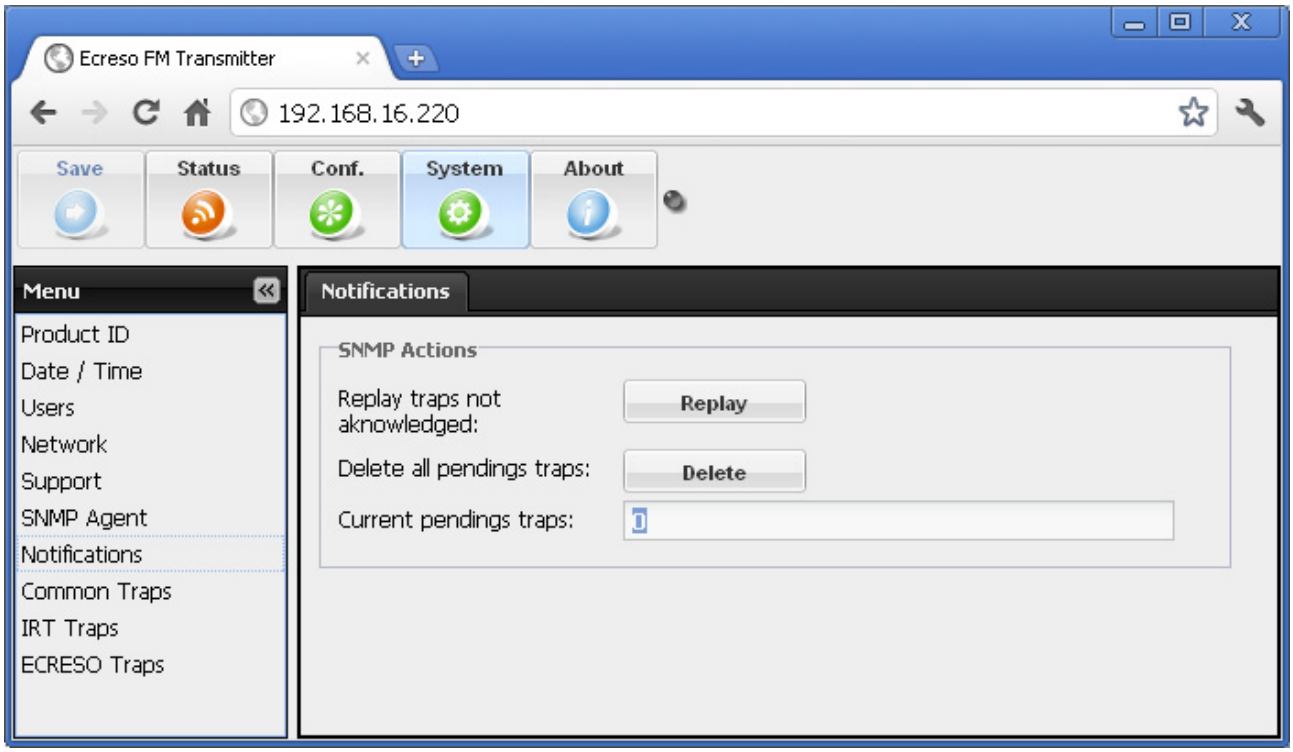
8.5.7. Notifications



- **SNMP Actions**

The user may replay traps that have not been acknowledged yet.

The user may also delete pending traps that have not been acknowledged yet.

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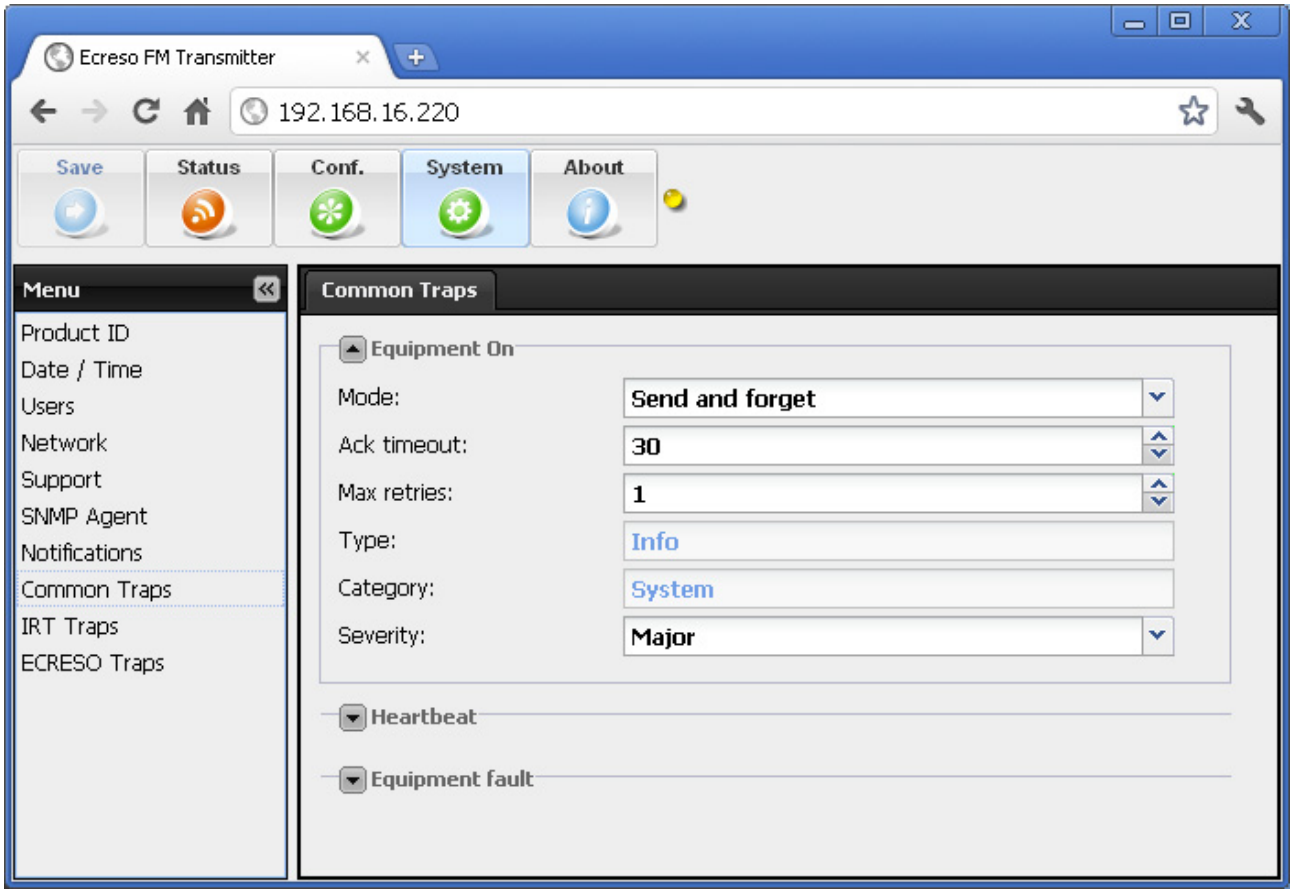
8.5.8. Common traps



Click the arrow next to the trap name to display its parameters.

To enable the trap, check "Enabled".

Set the mode:

- Resend until acknowledgement: the trap is regularly sent until acknowledgement.
- Send and forget: the trap is sent once, no follow-up is expected.

If “Resend until acknowledgement” is selected, set the time to wait for acknowledgement before resending the trap (Ack timeout) and the maximum number of times the trap will be resent (Max retries).

Set the priority; this information which is sent with the traps can be used by an SNMP Manager as filter criteria for instance.

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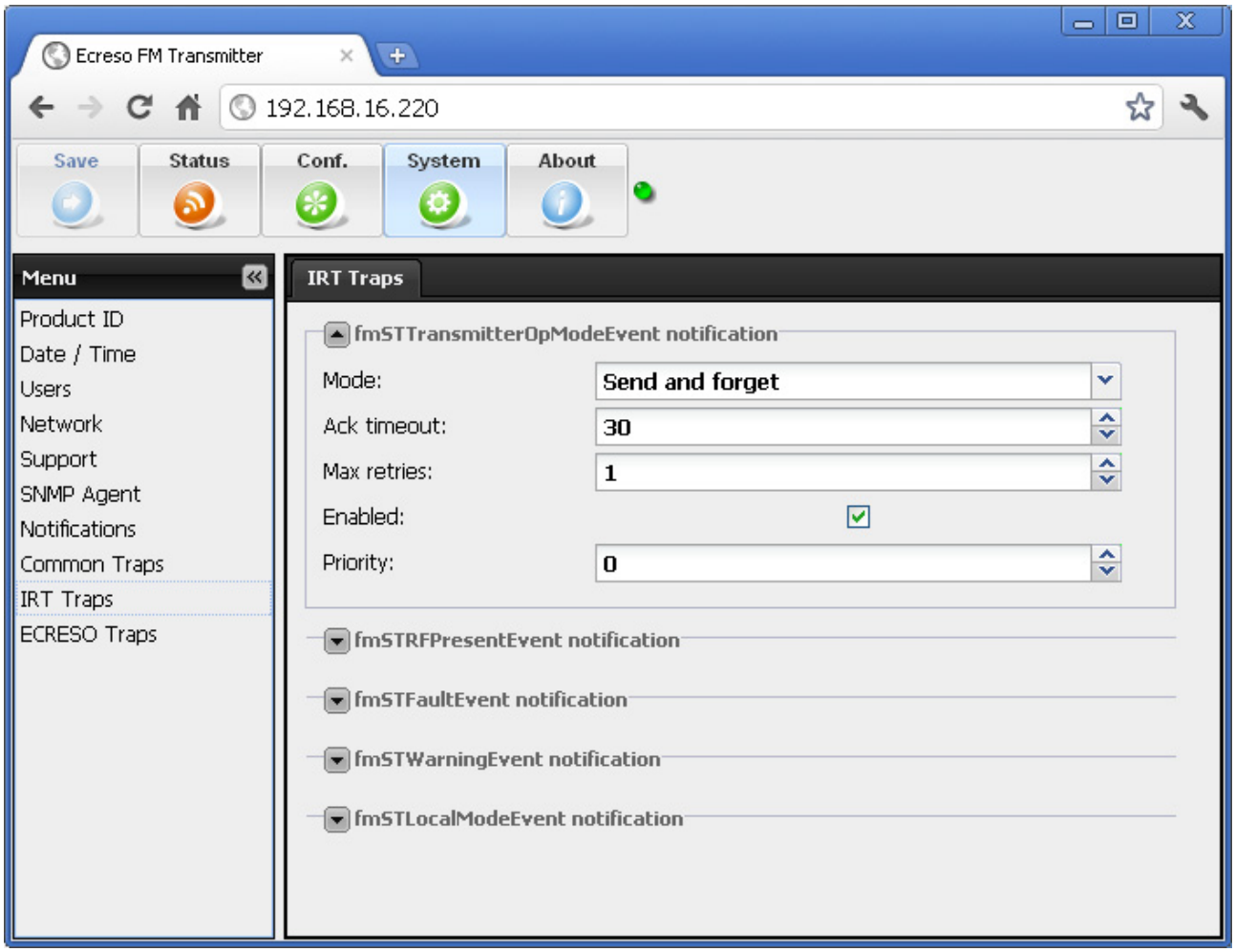
8.5.9. IRT Traps



IRT traps are configured like common traps (see previous section).

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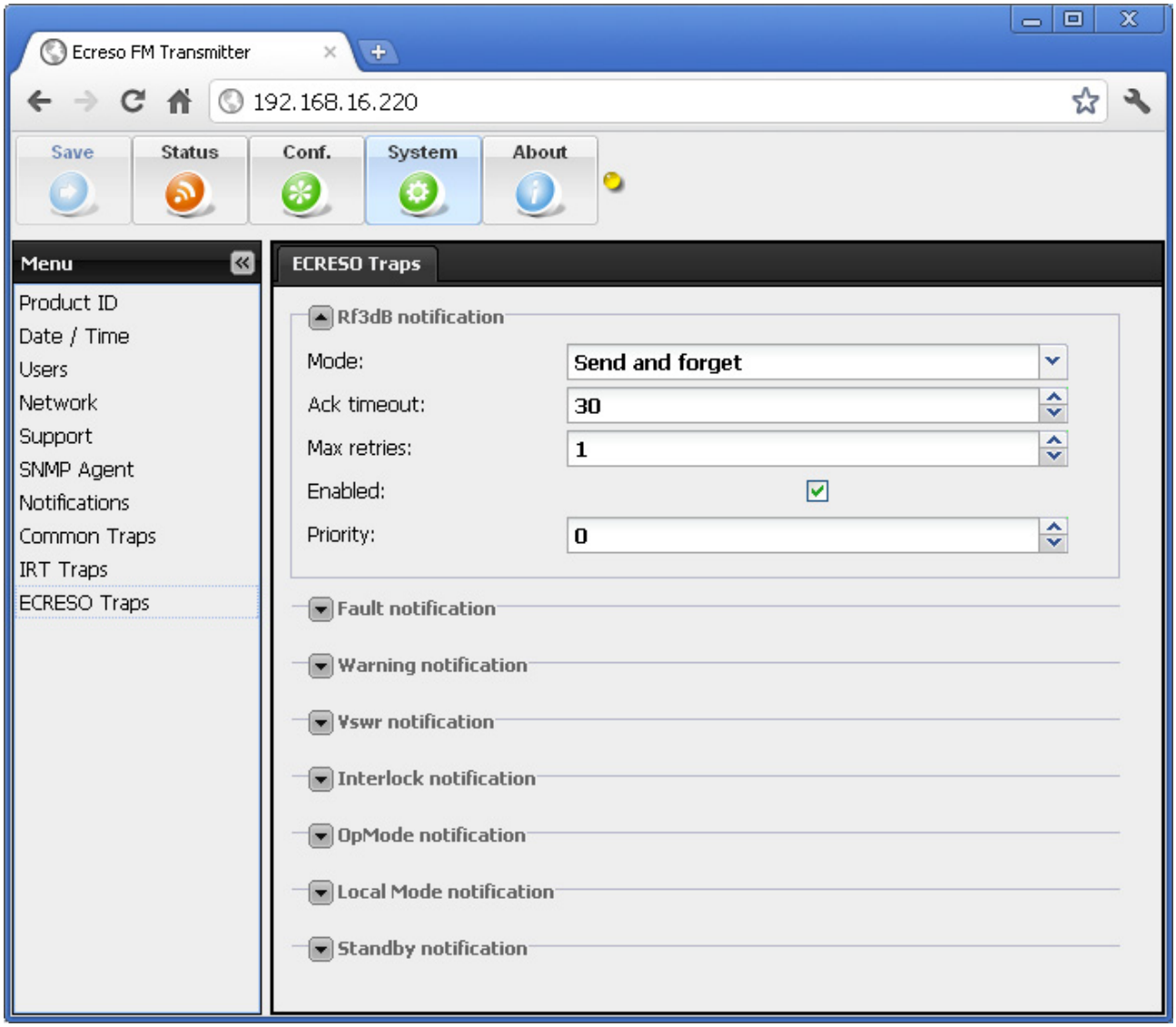
8.5.10. Ecreso Traps

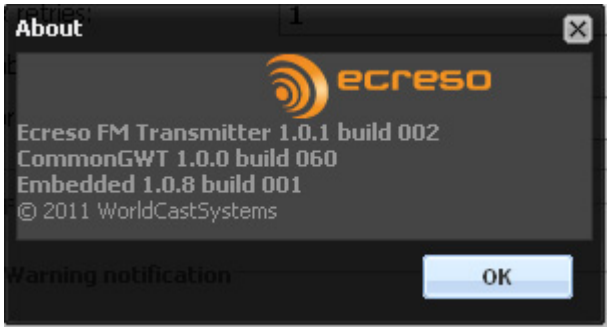


Ecreso traps are configured like common traps (see section 8.5.8).

ⓘ *No trap is sent on automatic audio switch.*

8.6. About

This window displays information regarding the web application



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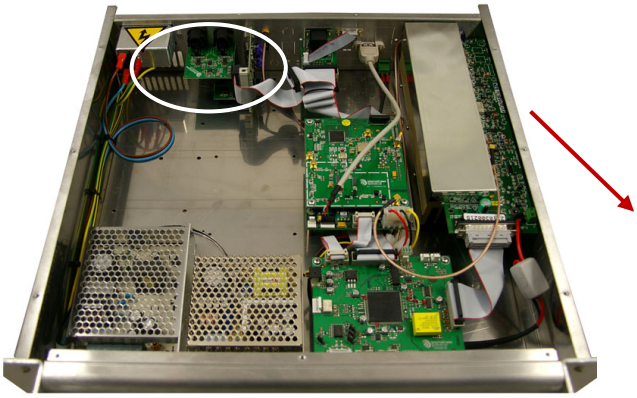
APPENDIX A: ADJUSTING THE IMPEDANCE OF ANALOG INPUTS

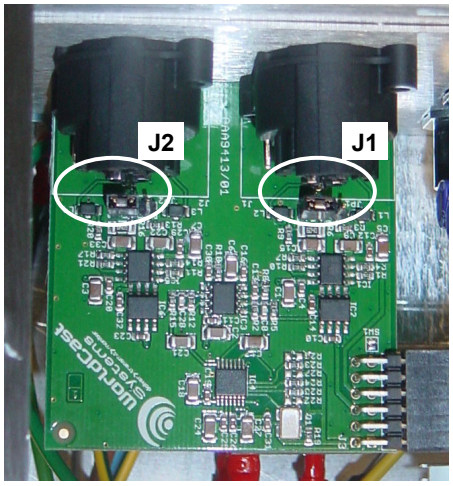
Default impedance of analog inputs is 10 kΩ.

It can be set to 600 Ω by jumpers.

Before setting the jumpers, make sure that all cables are disconnected. Remove all the screws securing the cover.

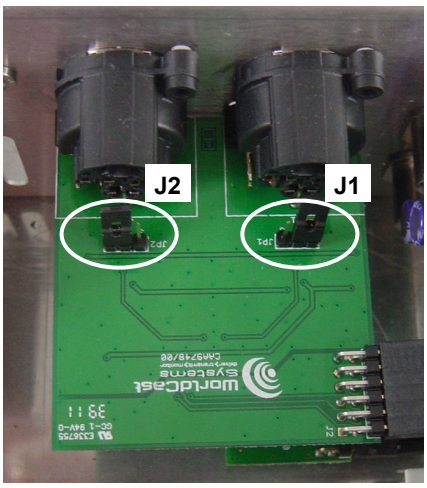
Depending on the version of your transmitter, you may have either a type I or a type II audio board.





Jumper position on a type I carte board:

	J2	J1
10 kΩ	■ ■ ■	■ ■ ■
600 Ω	■ ■ ■	■ ■ ■



Jumper position on a type II carte board:

	J2	J1
10 kΩ	■ ■ ■	■ ■ ■
600 Ω	■ ■ ■	■ ■ ■

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